

This Page Is Inserted by IFW Operations  
and is not a part of the Official Record

## **BEST AVAILABLE IMAGES**

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images may include (but are not limited to):

- BLACK BORDERS
- TEXT CUT OFF AT TOP, BOTTOM OR SIDES
- FADED TEXT
- ILLEGIBLE TEXT
- SKEWED/SLANTED IMAGES
- COLORED PHOTOS
- BLACK OR VERY BLACK AND WHITE DARK PHOTOS
- GRAY SCALE DOCUMENTS

**IMAGES ARE BEST AVAILABLE COPY.**

As rescanning documents *will not* correct images,  
please do not report the images to the  
Image Problem Mailbox.

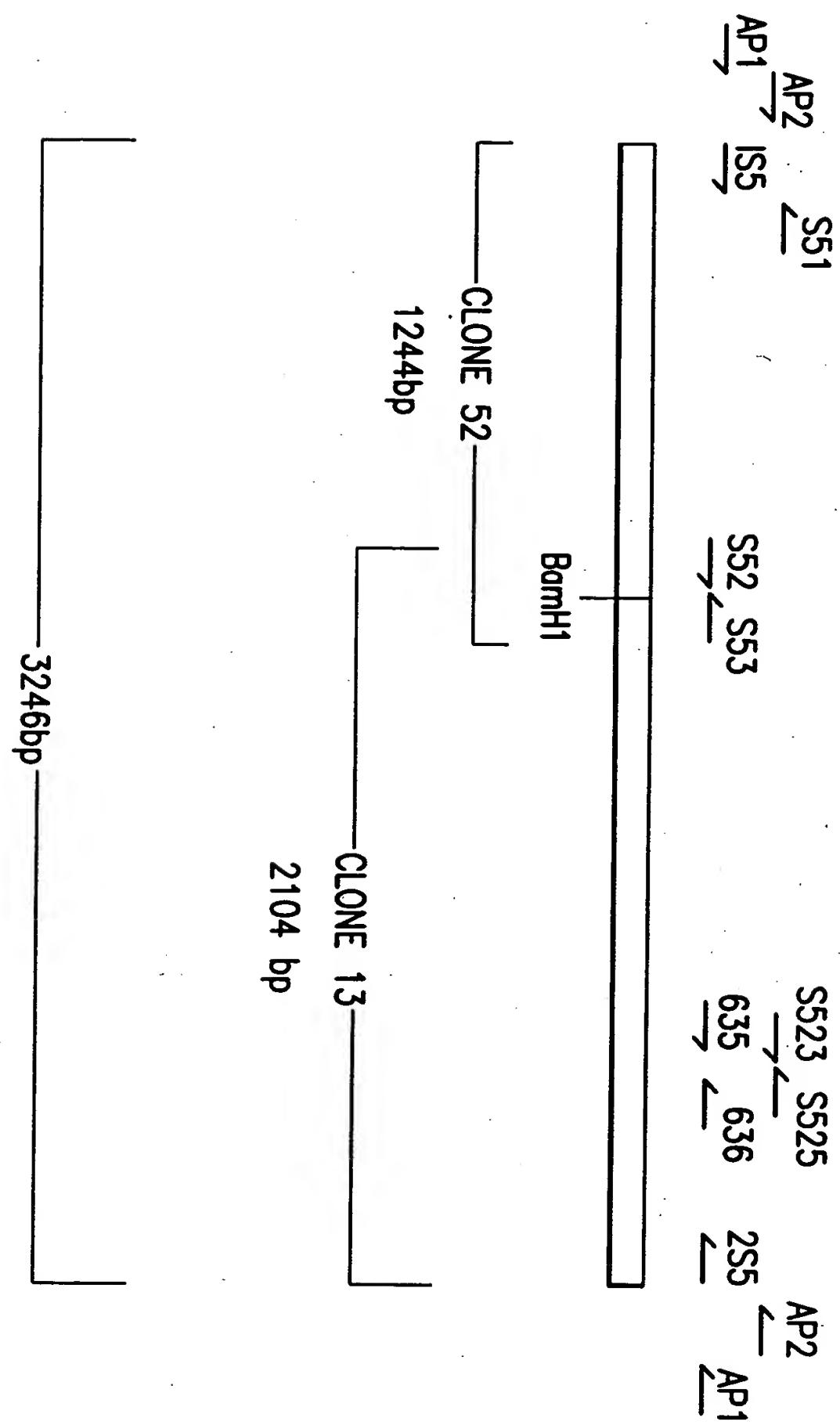
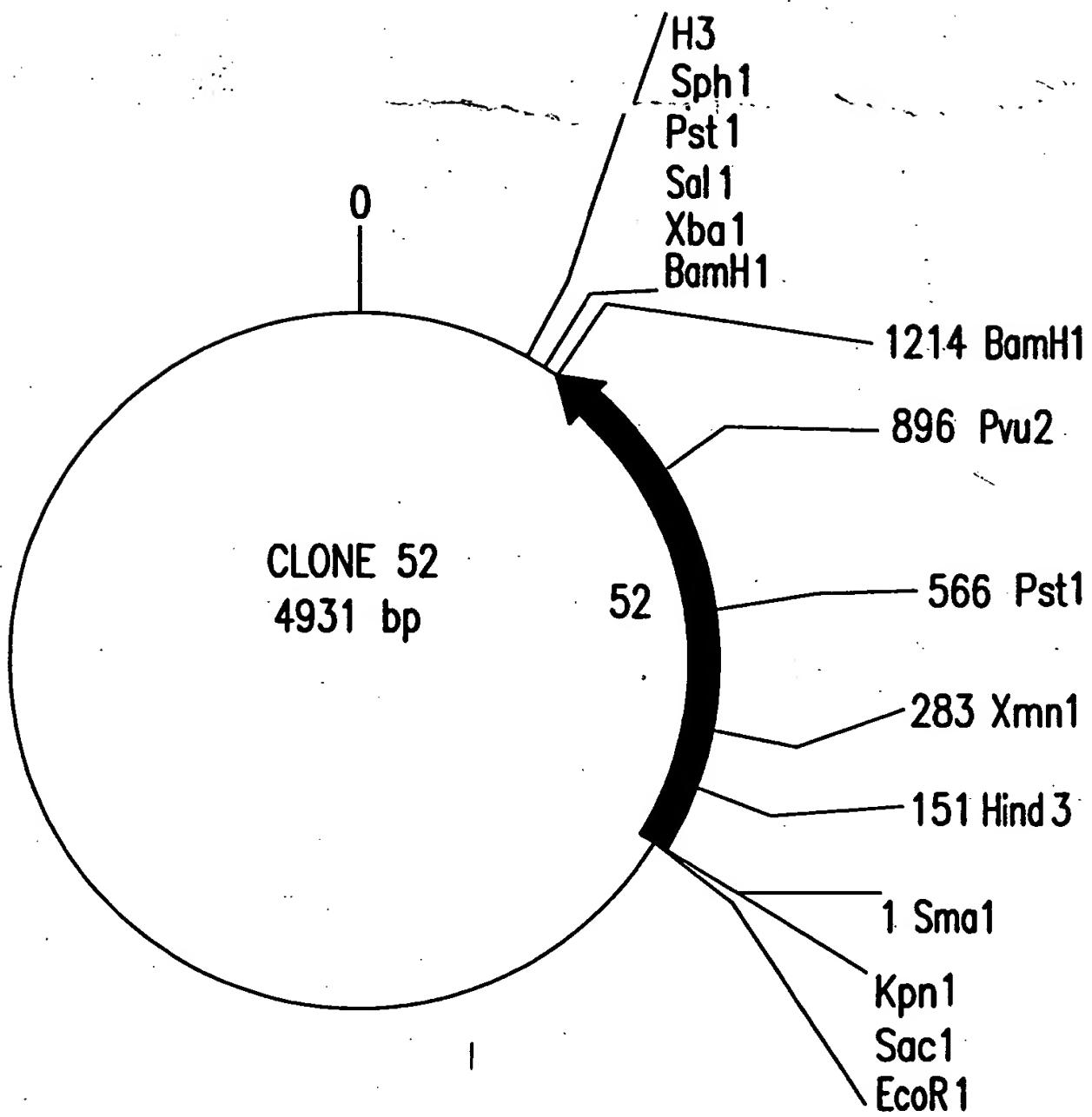
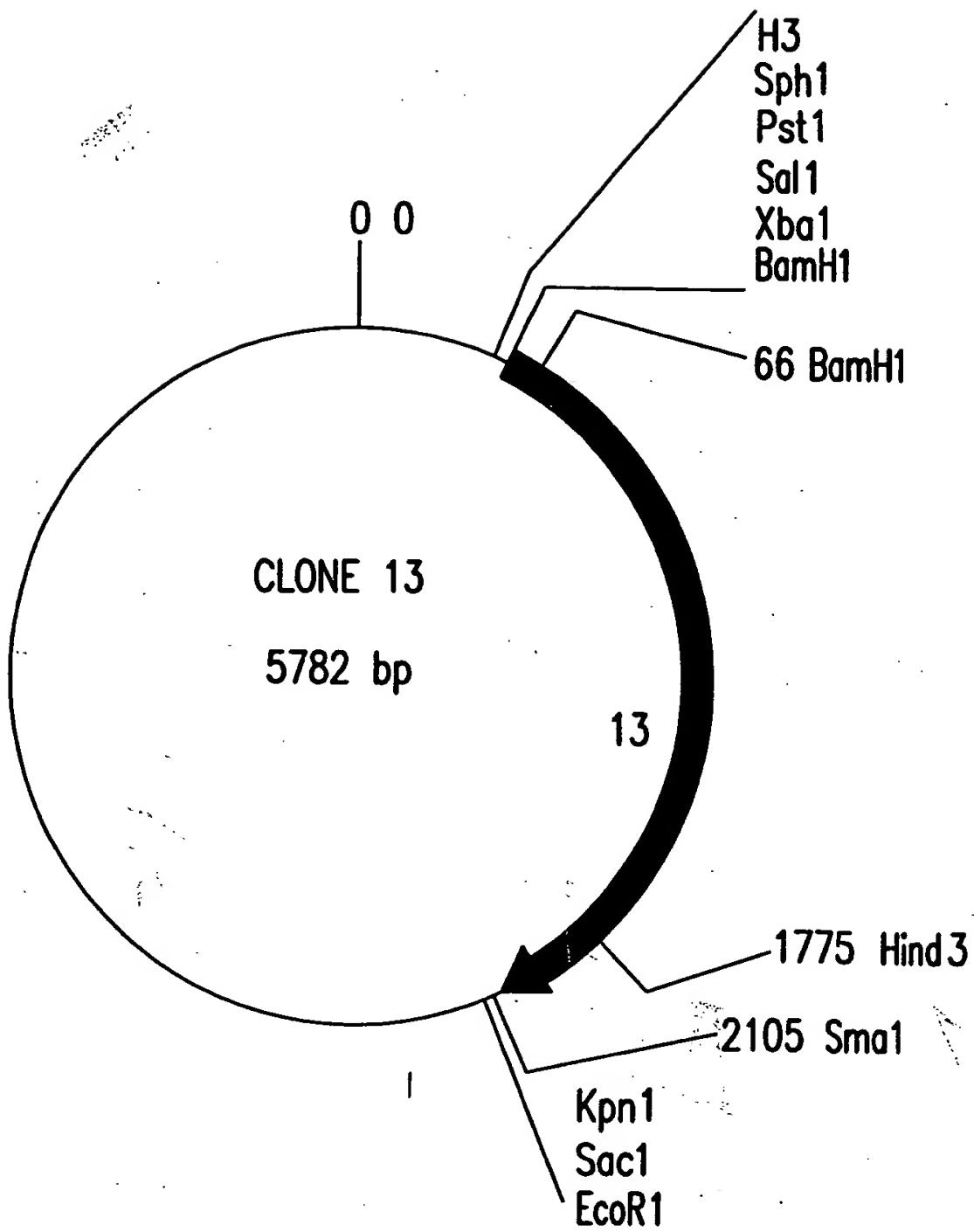


FIG. 1



COMMENTS/REFERENCES: 52=3' SIDE OF S5 (AtMSH3) 1244bp IN pUC18/Sma1

FIG.2



COMMENTS/REFERENCES: 13=3' SIDE OF S5 (AtMSH3) 2104bp IN pUC18/Sma1

FIG.3

|     |   |     |
|-----|---|-----|
| 1   | cCTAAGAACGCCGCGAAATGGCAACCCAGCTGCCATTCTCTAAACGGAGGA                             | 80  |
| 81  | GATTACGAATAAGCAATT  | 144 |
| 1   | ATG GGC AAG CAA AAG CAG CAG ACG ATT TCT CGT TTC TTC GCT CCC                     | 15  |
|     | M G K Q K Q Q T I S R F F A P   |     |
| 145 | AAA CCC AAA TCC CCG ACT CAC GAA CCG AAT CCG GTA GCC GAA TCA TCA ACA CCG CCA CCG | 204 |
| 16  | K P K S P T H E P N P V A E S S T P P P   | 35  |
| 205 | AAG ATA TCC GCC ACT GTA TCC TTC TCT CCT TCC AAG CGT AAG CTT CTC TCC GAC CAC CTC | 264 |
| 36  | K I S A T V S F S P S K R K L L S D H L   | 55  |
| 265 | GCC GCC GCG TCA CCC AAA AAG CCT AAA CTT TCT CCT CAC ACT CAA AAC CCA GTA CCC GAT | 324 |
| 56  | A A A S P K K P K L S P H T Q N P V P D   | 75  |
| 325 | CCC AAT TTA CAC CAA AGA TTT CTC CAG AGA TTT CTG GAA CCC TCG CCG GAG GAA TAT GTT | 384 |
| 76  | P N L H Q R F L Q R F L E P S P E E Y V   | 95  |
| 385 | CCC GAA ACG TCA TCA TCG AGG AAA TAC ACA CCA TTG GAA CAG CAA GTG GTG GAG CTA AAG | 444 |
| 96  | P E T S S S R K Y T P L E Q V V E L K   | 115 |
| 445 | AGC AAG TAC CCA GAT GTG GTT TTG ATG GTG GAA GTT GGT TAC AGG TAC AGA TTC TTC GGA | 504 |
| 116 | S K Y P D V V L M V E V G Y R Y R F F G   | 135 |
| 505 | GAA GAC GCG GAG ATC GCA GCA CGC GTG TTG GGT ATT TAC GCT CAT ATG GAT CAC AAT TTC | 564 |
| 136 | E D A E I A A R V L G I Y A H M D H N F   | 155 |
| 565 | ATG ACG GCG AGT GTG CCA ACA TTT CGA TTG AAT TTC CAT GTG AGA AGA CTG GTG AAT GCA | 624 |
| 156 | M T A S V P T F R L N F H V R R L V N A   | 175 |

FIG.4A

|      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |
|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|-----|
| 625  | GGA | TAC | AAG | ATT | GGT | GTA | GTG | AAG | CAG | ACT | GAA | ACT | GCA | GCC | ATT | AAG | TCC | CAT | GGT | GCA | 684  |     |
| 176  | G   | Y   | K   | I   | I   | G   | V   | V   | K   | Q   | T   | E   | T   | A   | A   | I   | K   | S   | H   | G   | A    | 195 |
| 665  | AAC | CGG | ACC | GCC | CCT | TTT | TTC | CGG | GGA | CTG | TCG | GCG | TTG | TAT | ACC | AAA | GCC | ACG | CTT | GAA | 744  |     |
| 196  | N   | R   | T   | G   | P   | F   | F   | R   | G   | L   | S   | A   | L   | Y   | T   | K   | A   | T   | L   | E   | 215  |     |
| 745  | GCG | GCT | GAG | GAT | ATA | AGT | GGT | GGT | TGT | GGT | GGT | GAA | GAA | GGT | TTT | GGT | TCA | CAG | AGT | AAT | 804  |     |
| 216  | A   | A   | E   | D   | I   | S   | G   | G   | C   | G   | G   | E   | E   | G   | F   | G   | S   | Q   | S   | N   | 235  |     |
| 805  | TTC | TTG | GTT | TGT | GTT | GTG | GAT | GAG | AGA | GTT | AAG | TCG | GAG | ACA | TTA | GCC | TGT | GGT | ATT | GAA | 864  |     |
| 236  | F   | L   | V   | C   | V   | V   | D   | E   | R   | V   | K   | S   | E   | T   | L   | G   | C   | G   | I   | E   | 255  |     |
| 865  | ATG | AGT | TTT | GAT | GTT | AGA | GTC | GGT | GTT | GCC | GTT | GAA | ATT | TCG | ACA | GGT | GAA | GTT | GTT | 924 |      |     |
| 256  | M   | S   | F   | D   | V   | R   | V   | G   | V   | G   | V   | E   | I   | S   | T   | G   | E   | V   | V   | 275 |      |     |
| 925  | TAT | GAA | GAG | TTC | AAT | GAT | AAT | TTC | ATG | AGA | AGT | GGA | TTA | GAG | GCT | GTG | ATT | TTG | AGC | TTG | 9884 |     |
| 276  | Y   | E   | E   | F   | N   | D   | N   | F   | M   | R   | S   | G   | L   | E   | A   | V   | I   | L   | S   | L   | 295  |     |
| 985  | TCA | CCA | GCT | GAG | CTG | TTG | CTT | GCC | CAG | CCT | CTT | TCA | CAA | CAA | ACT | GAG | AAG | TTT | TTG | GTG | 1044 |     |
| 296  | S   | P   | A   | E   | L   | L   | L   | G   | Q   | P   | L   | S   | Q   | Q   | T   | E   | K   | F   | L   | V   | 315  |     |
| 1045 | GCA | CAT | GCT | GGA | CCT | ACC | TCA | AAC | GTT | CGA | GTG | GAA | CGT | GCC | TCA | CTG | GAT | TGT | TTC | AGC | 1104 |     |
| 316  | A   | H   | A   | G   | P   | T   | S   | N   | V   | R   | V   | E   | R   | A   | S   | L   | D   | C   | F   | S   | 335  |     |
| 1105 | AAT | GGT | AAT | GCA | GTA | GAT | GAG | GTT | ATT | TCA | TTA | TGT | GAA | AAA | ATC | AGC | GCA | GGT | AAC | TTA | 1164 |     |
| 336  | N   | G   | N   | A   | V   | D   | E   | V   | I   | S   | L   | C   | E   | K   | I   | S   | A   | G   | N   | L   | 355  |     |
| 1165 | GAA | GAT | GAT | AAA | GAA | ATG | AAG | CTG | GAG | GCT | GCT | GAA | AAA | GGA | ATG | TCT | TGC | TTG | ACA | GTT | 1224 |     |
| 356  | E   | D   | D   | K   | E   | M   | K   | L   | E   | A   | A   | E   | K   | G   | M   | S   | C   | L   | T   | V   | 375  |     |

FIG.4B

|      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |
|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|
| 1225 | CAT | ACA | ATT | ATG | AAC | ATG | CCA | CAT | CTG | ACT | GTT | CAA | GCC | CTC | GCC | CTA | ACG | TTT | TGC | CAT  | 1284 |
| 376  | H   | T   | I   | M   | N   | M   | P   | H   | L   | T   | V   | Q   | A   | L   | A   | L   | T   | F   | C   | H    | 395  |
| 1285 | CTC | AAA | CAG | TTT | GGA | TAA | AGG | ATC | CTT | TAC | CAA | GGG | GCC | TCA | TTT | CGC | TCT | TTG | TCA | 1344 |      |
| 396  | L   | K   | Q   | F   | G   | F   | E   | R   | I   | L   | Y   | Q   | G   | A   | S   | F   | R   | S   | L   | S    | 415  |
| 1245 | AGT | AAC | ACA | GAG | ATG | ACT | CTC | TCA | GCC | AAT | ACT | CTG | CAA | CAG | TTG | GAG | GTT | GTG | AAA | AAT  | 1404 |
| 416  | S   | N   | T   | E   | M   | T   | L   | S   | A   | N   | T   | L   | Q   | Q   | L   | E   | V   | V   | K   | N    | 435  |
| 1405 | AAT | TCA | GAT | GGA | TCG | GAA | TCT | GCC | TCC | TTA | TTC | CAT | AAT | ATG | AAT | CAC | ACA | CTT | ACA | GTA  | 1464 |
| 436  | N   | S   | D   | G   | S   | E   | S   | G   | S   | L   | F   | H   | N   | M   | N   | H   | T   | L   | T   | V    | 455  |
| 1465 | TAT | GCT | TCC | AGG | CTT | CTT | AGA | CAC | TGG | GTG | ACT | CAT | CCT | CTA | TGC | GAT | AGA | AAT | TTG | ATA  | 1524 |
| 456  | Y   | A   | S   | R   | L   | L   | R   | H   | W   | V   | T   | H   | P   | L   | C   | D   | R   | N   | L   | I    | 475  |
| 1525 | TCT | GCT | CGG | CTT | GAT | GCT | GTT | TCT | GAG | ATT | TCT | GCT | TGC | ATG | GGA | TCT | CAT | AGT | TCT | TCC  | 1584 |
| 476  | S   | A   | R   | L   | D   | A   | V   | S   | E   | I   | S   | A   | C   | M   | G   | S   | H   | S   | S   | S    | 495  |
| 1585 | CAG | CTC | AGC | AGT | GAG | TTG | GTT | GAA | GAA | GGT | TCT | GAG | AGA | GCA | ATT | GTA | TCA | CCT | GAG | TTT  | 1644 |
| 496  | Q   | L   | S   | S   | E   | L   | V   | E   | E   | G   | S   | E   | R   | A   | I   | V   | S   | P   | E   | F    | 515  |
| 1645 | TAT | CTC | GTG | CTC | TCC | TCA | GTC | TTG | ACA | GCT | ATG | TCT | AGA | TCA | TCT | GAT | ATT | CAA | CGT | GGA  | 1704 |
| 516  | Y   | L   | V   | L   | S   | S   | V   | L   | T   | A   | M   | S   | R   | S   | S   | D   | I   | Q   | R   | G    | 535  |
| 1705 | ATA | ACA | AGA | ATC | TTT | CAT | CGG | ACT | GCT | AAA | GCC | ACA | GAG | TTC | ATT | GCA | GTT | ATG | GAA | GCT  | 1764 |
| 536  | I   | T   | R   | I   | F   | H   | R   | T   | A   | K   | A   | T   | E   | F   | I   | A   | V   | M   | E   | A    | 555  |
| 1765 | ATT | TTA | CTT | GCG | GGG | AAG | CAA | ATT | CAG | CGG | CTT | GGC | ATA | AAG | CAA | GAC | TCT | GAA | ATG | AGG  | 1824 |
| 556  | I   | L   | L   | A   | G   | K   | Q   | I   | Q   | R   | L   | G   | I   | K   | Q   | D   | S   | E   | M   | R    | 575  |

FIG.4C

|      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |     |      |      |
|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|-----|-----|------|------|
| 1825 | AGT | ATG | CAA | TCT | GCA | ACT | GTG | CGA | TCT | ACT | CTT | TTG | AGA | AAA | TTG | ATT | TCT  | GTT | ATT | TCA  | 1884 |
| 576  | S   | M   | Q   | S   | A   | T   | V   | R   | S   | T   | L   | L   | R   | K   | L   | I   | S    | V   | I   | S    | 595  |
| 1885 | TCC | CCT | GTT | GTG | GTT | GAC | AAT | GCC | GGA | AAA | CTT | CTC | TCT | GCC | CTA | AAT | AAG  | GAA | GCG | GCT  | 1944 |
| 596  | S   | P   | V   | V   | V   | D   | N   | A   | G   | K   | L   | L   | S   | A   | L   | N   | K    | E   | A   | A    | 615  |
| 1945 | GTT | CGA | GGT | GAC | TTG | CTC | GAC | ATA | CTA | ATC | ACT | TCC | AGC | GAC | CAA | TTT | CCT  | GAG | CTT | GCT  | 2004 |
| 616  | V   | R   | G   | D   | L   | L   | D   | I   | L   | I   | T   | S   | S   | D   | Q   | F   | P    | E   | L   | A    | 635  |
| 2005 | GAA | GCT | CGC | CAA | GCA | GTT | TTA | GTC | ATC | AGG | GAA | AAG | CTG | GAT | TCC | TCG | ATA  | GCT | TCA | TTT  | 2064 |
| 636  | E   | A   | R   | Q   | A   | V   | L   | V   | I   | R   | E   | K   | L   | D   | S   | S   | I    | A   | S   | F    | 655  |
| 2065 | CGC | AAG | AAG | CTC | GCT | ATT | CGA | AAT | TTG | GAA | TTT | CTT | CAA | GTG | TCG | GGG | ATC  | ACA | CAT | TG   | 2124 |
| 656  | R   | K   | K   | L   | A   | I   | R   | N   | L   | E   | F   | L   | Q   | V   | S   | G   | I    | T   | H   | L    | 675  |
| 2125 | ATA | GAG | CTG | CCC | GTT | GAT | TCC | AAG | GTC | CCT | ATG | AAT | TTG | GTG | AAA | GTA | AAT  | AGC | ACC | AAG  | 2184 |
| 676  | I   | E   | L   | P   | V   | D   | S   | K   | V   | P   | M   | N   | W   | V   | K   | V   | N    | S   | T   | K    | 695  |
| 2185 | AAG | ACT | ATT | CGA | TAT | CAT | CCC | CCA | GAA | ATA | GTA | GCT | GGC | TTG | GAT | GAG | CCTA | GCA | CTA | GCA  | 2244 |
| 696  | K   | T   | I   | R   | Y   | H   | P   | P   | E   | I   | V   | A   | G   | L   | D   | E   | L    | A   | L   | A    | 715  |
| 2245 | ACT | GAA | CAT | CTT | GCC | ATT | GTG | AAC | CGA | GCT | TCG | TGG | GAT | AGT | TTC | CTC | AAG  | AGT | TTC | AGT  | 2304 |
| 716  | T   | E   | H   | L   | A   | I   | V   | N   | R   | A   | S   | W   | D   | S   | F   | L   | K    | S   | F   | S    | 735  |
| 2305 | AGA | TAC | TAC | ACA | GAT | TTT | AAG | GCT | GCC | CAA | GCT | CTT | GCT | GCA | CTG | GAC | TGT  | TTG | CAC | 2364 |      |
| 736  | R   | Y   | Y   | T   | D   | F   | K   | A   | A   | V   | Q   | A   | L   | A   | A   | L   | D    | C   | L   | H    | 755  |
| 2365 | TCC | CTT | TCA | ACT | CTA | TCT | AGA | AAC | AAG | AAC | TAT | GTC | CGT | CCC | GAG | TTT | GTG  | GAT | GAC | TGT  | 2424 |
| 756  | S   | L   | S   | T   | L   | S   | R   | N   | K   | N   | Y   | V   | R   | P   | E   | F   | V    | D   | D   | C    | 775  |

FIG.4D

|      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |
|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| 2425 | GAA | CCA | GTT | GAG | ATA | AAC | ATA | CAG | TCT | GGT | CGT | CAT | CCT | GTA | CTG | GAG | ACT | ATA | TTA | CAA | 2484 |
| 776  | E   | P   | V   | E   | I   | N   | I   | Q   | S   | G   | R   | H   | P   | V   | L   | E   | T   | I   | L   | Q   | 795  |
| 2485 | GAT | AAC | TTC | GTC | CCA | AAT | GAC | ACA | ATT | TTC | CAT | GCA | GAA | GGG | GAA | TAT | TGC | CAA | ATT | ATC | 2544 |
| 796  | D   | N   | F   | V   | P   | N   | D   | T   | I   | L   | H   | A   | E   | G   | E   | Y   | C   | Q   | I   | I   | 815  |
| 2545 | ACC | GGA | CCT | AAC | ATG | GGA | GGA | AAG | AGC | TGC | TAT | ATC | CGT | CAA | GTT | GCT | TTA | ATT | TCC | ATA | 2604 |
| 816  | T   | G   | P   | N   | M   | G   | G   | K   | S   | C   | Y   | I   | R   | Q   | V   | A   | L   | I   | S   | I   | 835  |
| 2605 | ATG | GCT | CAG | GTT | GGT | TCC | TTT | GTA | CCA | GCG | TCA | TTC | GCC | AAG | CTG | CAC | GTG | CTT | GAT | GGT | 2664 |
| 836  | M   | A   | Q   | V   | G   | S   | F   | V   | P   | A   | S   | F   | A   | K   | L   | H   | V   | L   | D   | G   | 855  |
| 2665 | GTT | TTC | ACT | CGG | ATG | GCT | GCT | TCA | GAC | AGT | ATC | CAG | CAT | GCG | AGA | AGT | ACC | TTT | CIA | GAA | 2724 |
| 856  | V   | F   | T   | R   | M   | G   | A   | S   | D   | S   | I   | Q   | H   | G   | R   | S   | T   | F   | L   | E   | 875  |
| 2725 | GAA | TTA | AGT | GAA | GCG | TCA | CAC | ATA | ATC | AGA | ACC | TGT | TCT | CCT | CGT | TCG | CTT | GTT | ATA | TTA | 2784 |
| 876  | E   | L   | S   | E   | A   | S   | H   | I   | I   | R   | T   | C   | S   | S   | R   | S   | L   | V   | I   | L   | 985  |
| 2785 | GAT | GAG | CTT | GGA | AGA | GCG | ACT | AGC | ACA | CAC | GAC | GGT | GTA | GCC | ATT | GCC | TAT | GCA | ACA | ATA | 2844 |
| 896  | D   | E   | L   | G   | R   | G   | T   | S   | T   | H   | D   | G   | V   | A   | I   | A   | Y   | A   | T   | L   | 915  |
| 2845 | CAG | CAT | CTC | CTA | GCA | GAA | AAG | AGA | TGT | TTG | GTT | CTT | TTT | GTC | AGG | CAT | TAC | CCT | GAA | ATA | 2904 |
| 916  | Q   | H   | L   | L   | A   | E   | K   | R   | T   | V   | L   | F   | V   | T   | H   | Y   | P   | E   | I   | 935 |      |
| 2905 | GCT | GAG | ATC | AGT | AAC | GGA | TTC | CCA | GGT | TCT | GTT | GGG | ACA | TAC | CAT | GTC | TCG | TAT | CTG | ACA | 2964 |
| 936  | A   | E   | I   | S   | N   | G   | F   | P   | G   | S   | V   | G   | T   | Y   | H   | V   | S   | Y   | L   | T   | 955  |
| 2965 | TTG | CAG | AAG | GAT | AAA | GGC | AGT | TAT | GAT | CAT | GAT | GAT | GTG | ACC | TAC | CTA | TAT | AAG | CTT | GTG | 3024 |
| 956  | L   | Q   | K   | D   | K   | G   | S   | Y   | D   | H   | D   | V   | T   | Y   | L   | Y   | K   | L   | V   | 975 |      |

FIG.4E

|      |           |     |     |     |     |     |     |     |     |     |           |                                |         |         |         |         |         |         |         |         |      |
|------|-----------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----------|--------------------------------|---------|---------|---------|---------|---------|---------|---------|---------|------|
| 3025 | CGT       | GCT | CTT | TGC | AGC | AGG | AGC | TTT | GGT | TTT | AAG       | GTT                            | GCT     | CAG     | CTT     | GCC     | CAG     | ATA     | CCT     | CCA     | 3084 |
| 976  | R         | G   | L   | C   | S   | R   | S   | F   | G   | F   | K         | V                              | A       | Q       | L       | A       | Q       | I       | P       | P       | 995  |
| 3085 | TCA       | TGT | ATA | CGT | CGA | GCC | ATT | TCA | ATG | GCT | GCA       | AAA                            | TTG     | GAA     | GCT     | GAG     | GTA     | CGT     | GCA     | AGA     | 3144 |
| 996  | S         | C   | I   | R   | R   | A   | I   | S   | M   | A   | A         | K                              | L       | E       | A       | E       | V       | R       | A       | R       | 1015 |
| 3145 | GAG       | AGA | AAT | ACA | CGC | ATG | GGA | GAA | CCA | GAA | GGA       | CAT                            | GAA     | GAA     | CCG     | AGA     | GGC     | GCA     | GAA     | GAA     | 3204 |
| 1016 | E         | R   | N   | T   | R   | M   | G   | E   | P   | E   | G         | H                              | E       | E       | P       | R       | G       | A       | E       | E       | 1035 |
| 3205 | TCT       | ATT | TCG | GCT | CTA | GGT | GAC | TTG | TTT | GCA | GAC       | CTG                            | AAA     | TTT     | GCT     | CTC     | TCT     | GAA     | GAG     | GAC     | 3264 |
| 1036 | S         | I   | S   | A   | L   | G   | D   | L   | F   | A   | D         | L                              | K       | F       | A       | L       | S       | E       | E       | D       | 1055 |
| 3265 | CCT       | TGG | AAA | GCA | TTC | GAG | TTT | TTA | AAG | CAT | GCT       | TGG                            | AAG     | ATT     | GCT     | GCC     | AAA     | ATC     | AGA     | CTA     | 3324 |
| 1056 | P         | W   | K   | A   | F   | E   | F   | L   | K   | H   | A         | W                              | K       | I       | A       | G       | K       | I       | R       | L       | 1075 |
| 3325 | AAA       | CCA | ACT | TGT | TCA | TTT | TGA | TTA | ACT | TTA | ACATTAGCA | ACTGCAAGGTCTGATCATCTGTTAGTTGCG | 3397    |         |         |         |         |         |         |         |      |
| 1076 | K         | P   | T   | C   | S   | F   | *   |     |     |     |           |                                |         |         |         |         |         |         |         |         | 1082 |
| 3398 | TACTAACTT | ATG | TGT | ATT | AGT | ATA | ACA | AGA | AAA | GAG | AAT       | TAG                            | AGAG    | ATG     | GAT     | TCT     | AAT     | CCG     | 3458    |         |      |
| 1    | M         | C   | I   | S   | I   | T   | R   | K   | E   | N   | *         | M                              | D       | S       | N       | P       |         |         |         |         | 5    |
| 3459 | GTG       | TTG | CAG | TAC | ATC | TTT | TCT | CCA | CCC | GCA | TAA       | AAAAAAA                        | AAAAAAA | AAAAAAA | AAAAAAA | AAAAAAA | AAAAAAA | AAAAAAA | AAAAAAA | AAAAAAA | 3522 |
| 6    | V         | L   | Q   | Y   | I   | F   | S   | P   | P   | A   | *         |                                |         |         |         |         |         |         |         |         | 16   |

FIG.4F

|          |  |   |   |                                 |
|----------|--|---|---|---------------------------------|
| MSH3 -At | ..-M <b>G</b> K <b>Q</b> K -   | ..-M <b>G</b> K <b>Q</b> K -  | ..-M <b>G</b> K <b>Q</b> K -  | ..-M <b>G</b> K <b>Q</b> K -    |
| MSH3 -Sc | <b>M</b> <b>V</b> <b>I</b> <b>G</b> <b>N</b> <b>E</b> <b>P</b> <b>K</b> <b>L</b> <b>V</b> <b>L</b> <b>R</b> <b>A</b> <b>K</b> <b>S</b> <b>A</b> <b>N</b> <b>R</b> <b>F</b> <b>I</b> <b>L</b> <b>L</b> <b>T</b> <b>I</b> <b>M</b> <b>A</b> <b>G</b> <b>O</b> <b>P</b> <b>T</b> <b>I</b> <b>S</b> <b>R</b> <b>F</b> <b>E</b> <b>K</b> <b>K</b> <b>A</b> <b>V</b> <b>K</b> <b>S</b> <b>E</b> <b>L</b> <b>T</b> <b>H</b> <b>K</b> <b>Q</b> <b>E</b> <b>Q</b> <b>E</b> <b>V</b> <b>A</b> <b>V</b> <b>G</b> <b>N</b> <b>G</b> <b>A</b> <b>G</b> <b>S</b> <b>E</b> <b>S</b> <b>I</b> <b>C</b> <b>I</b> <b>L</b> <b>D</b> <b>T</b> <b>D</b> <b>E</b> <b>E</b> <b>D</b> <b>N</b> <b>L</b> <b>S</b> <b>V</b> <b>A</b> <b>S</b> <b>T</b> <b>T</b> <b>V</b> <b>T</b> <b>N</b> <b>D</b> <b>S</b> <b>F</b> <b>P</b> <b>L</b> <b>K</b> <b>G</b> <b>S</b>                    | <b>I</b> <b>S</b> <b>A</b> <b>T</b> <b>V</b> <b>S</b> <b>F</b> <b>S</b> <b>P</b> <b>S</b> <b>K</b> <b>R</b> <b>K</b> <b>L</b> <b>L</b>  | <b>Q</b> <b>O</b> <b>T</b> <b>I</b> <b>S</b> <b>R</b> <b>F</b> <b>F</b> <b>A</b> <b>P</b> <b>K</b> <b>K</b> <b>S</b> <b>P</b> <b>-</b> <b>T</b> <b>H</b> <b>E</b> <b>-</b> <b>P</b> <b>N</b> <b>P</b> <b>V</b> <b>A</b> <b>E</b> <b>S</b> <b>T</b> <b>P</b> <b>P</b> <b>P</b> <b>K</b> <b>-</b> | <b>..-M<b>G</b>K<b>Q</b>K -</b> |
| MSH3 -At | <b>S</b> <b>D</b> <b>H</b> <b>L</b> <b>A</b> <b>A</b> <b>S</b> <b>P</b> <b>K</b> <b>K</b> <b>P</b> <b>K</b> <b>L</b> <b>S</b> <b>P</b> <b>H</b> <b>I</b> <b>Q</b> <b>N</b> <b>P</b> <b>V</b> <b>P</b> <b>D</b> <b>P</b> <b>N</b> <b>L</b> <b>H</b> <b>O</b> <b>R</b> <b>F</b> <b>L</b> <b>O</b> <b>R</b> <b>F</b> <b>L</b> <b>E</b> <b>P</b> <b>-</b> <b>..-S</b> <b>P</b> <b>E</b> <b>E</b> <b>Y</b> <b>V</b> <b>P</b> <b>E</b> <b>T</b> <b>S</b> <b>-</b> <b>..-S</b> <b>R</b> <b>K</b> <b>Y</b> <b>T</b> <b>P</b> <b>L</b> <b>E</b> <b>O</b> <b>Q</b> <b>W</b> <b>E</b> <b>L</b> <b>K</b> <b>S</b> <b>K</b> <b>Y</b> <b>P</b> <b>D</b> <b>V</b> <b>V</b> <b>L</b> <b>M</b> <b>V</b> <b>E</b> <b>V</b> <b>G</b> <b>Y</b> <b>R</b> <b>F</b> <b>-</b>  | <b>V</b> <b>S</b> <b>S</b> <b>K</b> <b>N</b> <b>S</b> <b>E</b> <b>K</b> <b>T</b> <b>S</b> <b>G</b> <b>T</b> <b>S</b> <b>I</b> <b>F</b> <b>N</b> <b>D</b> <b>I</b> <b>D</b> <b>A</b> <b>K</b> <b>K</b> <b>L</b> <b>D</b> <b>R</b> <b>I</b> <b>M</b> <b>K</b> <b>R</b> <b>S</b> <b>D</b> <b>E</b> <b>N</b> <b>V</b> <b>E</b> <b>A</b> <b>D</b> <b>D</b> <b>E</b> <b>E</b> <b>G</b> <b>E</b> <b>E</b> <b>D</b> <b>F</b> <b>V</b> <b>V</b> <b>K</b> <b>K</b> <b>A</b> <b>R</b> <b>K</b> <b>S</b> <b>P</b> <b>T</b> <b>A</b> <b>K</b> <b>L</b> <b>T</b> <b>P</b> <b>L</b> <b>D</b> <b>K</b> <b>Q</b> <b>V</b> <b>K</b> <b>D</b> <b>L</b> <b>K</b> <b>M</b> <b>H</b> <b>H</b> <b>R</b> <b>D</b> <b>K</b> <b>V</b> <b>L</b> <b>V</b> <b>I</b> <b>R</b> <b>V</b> <b>G</b> <b>K</b> <b>Y</b> <b>K</b> <b>C</b>   | <b>..-M<b>G</b>K<b>Q</b>K -</b>   |                                 |
| MSH3 -At | <b>F</b> <b>G</b> <b>E</b> <b>D</b> <b>A</b> <b>E</b> <b>I</b> <b>A</b> <b>R</b> <b>V</b> <b>I</b> <b>G</b> <b>I</b> <b>Y</b> <b>A</b> <b>H</b> <b>-</b> <b>..-M</b> <b>D</b> <b>H</b> <b>N</b> <b>-</b> <b>..-F</b> <b>M</b> <b>T</b> <b>A</b> <b>S</b> <b>V</b> <b>P</b> <b>T</b> <b>F</b> <b>R</b> <b>L</b> <b>N</b> <b>F</b> <b>H</b> <b>V</b> <b>R</b> <b>R</b> <b>L</b> <b>V</b> <b>N</b> <b>A</b> <b>G</b> <b>Y</b> <b>R</b> <b>K</b> <b>G</b> <b>W</b> <b>K</b> <b>Q</b> <b>T</b> <b>E</b> <b>A</b> <b>I</b> <b>K</b> <b>H</b> <b>-</b> <b>-G</b> <b>A</b> <b>N</b> <b>R</b> <b>T</b> <b>G</b> <b>P</b> <b>F</b> <b>F</b> <b>R</b> <b>G</b> <b>L</b> <b>S</b> <b>A</b> <b>Y</b> <b>T</b> <b>K</b> <b>A</b> <b>-</b>  | <b>F</b> <b>A</b> <b>E</b> <b>D</b> <b>A</b> <b>V</b> <b>T</b> <b>V</b> <b>S</b> <b>R</b> <b>I</b> <b>L</b> <b>H</b> <b>I</b> <b>K</b> <b>L</b> <b>V</b> <b>P</b> <b>G</b> <b>K</b> <b>L</b> <b>T</b> <b>I</b> <b>D</b> <b>E</b> <b>S</b> <b>N</b> <b>P</b> <b>Q</b> <b>D</b> <b>C</b> <b>N</b> <b>H</b> <b>R</b> <b>O</b> <b>F</b> <b>A</b> <b>Y</b> <b>C</b> <b>S</b> <b>F</b> <b>P</b> <b>D</b> <b>V</b> <b>R</b> <b>L</b> <b>N</b> <b>V</b> <b>H</b> <b>L</b> <b>R</b> <b>L</b> <b>V</b> <b>H</b> <b>N</b> <b>L</b> <b>K</b> <b>V</b> <b>A</b> <b>W</b> <b>E</b> <b>Q</b> <b>A</b> <b>E</b> <b>T</b> <b>S</b> <b>A</b> <b>I</b> <b>K</b> <b>H</b> <b>D</b> <b>P</b> <b>G</b> <b>A</b> <b>S</b> <b>K</b> <b>S</b> <b>V</b> <b>E</b> <b>E</b> <b>R</b> <b>K</b> <b>I</b> <b>S</b> <b>N</b> <b>V</b> <b>F</b> <b>I</b> <b>K</b> <b>A</b>   | <b>..-M<b>G</b>K<b>Q</b>K -</b>   |                                 |
| MSH3 -At | <b>I</b> <b>L</b> <b>E</b> <b>A</b> <b>A</b> <b>E</b> <b>I</b> <b>S</b> <b>G</b> <b>G</b> <b>G</b> <b>E</b> <b>E</b> <b>G</b> <b>F</b> <b>C</b> <b>S</b> <b>Q</b> <b>S</b> <b>N</b> <b>N</b> <b>F</b> <b>L</b> <b>V</b> <b>C</b> <b>V</b> <b>W</b> <b>E</b> <b>R</b> <b>V</b> <b>K</b> <b>S</b> <b>E</b> <b>T</b> <b>L</b> <b>G</b> <b>C</b> <b>G</b> <b>I</b> <b>E</b> <b>M</b> <b>S</b> <b>F</b> <b>D</b> <b>V</b> <b>R</b> <b>V</b> <b>G</b> <b>V</b> <b>G</b> <b>E</b> <b>E</b> <b>I</b> <b>S</b> <b>T</b> <b>G</b> <b>E</b> <b>V</b> <b>V</b> <b>Y</b> <b>E</b> <b>F</b> <b>F</b> <b>N</b> <b>D</b> <b>-</b> <b>N</b> <b>F</b> <b>M</b> <b>R</b> <b>S</b> <b>G</b> <b>L</b> <b>E</b> <b>A</b> <b>V</b> <b>I</b> <b>L</b> <b>S</b> <b>I</b> <b>S</b> <b>P</b> <b>A</b> <b>E</b> <b>L</b> <b>I</b> <b>L</b> <b>G</b> <b>-</b> <b>Q</b> <b>P</b> <b>-</b>  | <b>I</b> <b>S</b> <b>Q</b> <b>O</b> <b>T</b> <b>E</b> <b>K</b> <b>F</b> <b>L</b> <b>V</b> <b>A</b> <b>M</b> <b>A</b> <b>G</b> <b>P</b> <b>T</b> <b>S</b> <b>N</b> <b>V</b> <b>R</b> <b>V</b> <b>E</b> <b>R</b> <b>A</b> <b>S</b> <b>L</b> <b>D</b> <b>C</b> <b>F</b> <b>S</b> <b>N</b> <b>G</b> <b>N</b> <b>A</b> <b>V</b> <b>D</b> <b>E</b> <b>V</b> <b>I</b> <b>T</b> <b>S</b> <b>I</b> <b>C</b> <b>E</b> <b>K</b> <b>I</b> <b>S</b> <b>A</b> <b>G</b> <b>N</b> <b>L</b> <b>E</b> <b>D</b> <b>D</b> <b>K</b> <b>E</b> <b>M</b> <b>K</b> <b>L</b> <b>E</b> <b>A</b> <b>E</b> <b>K</b> <b>G</b> <b>M</b> <b>S</b> <b>C</b> <b>L</b> <b>T</b> <b>V</b> <b>H</b> <b>T</b> <b>I</b> <b>M</b> <b>N</b> <b>M</b> <b>P</b> <b>H</b> <b>L</b> <b>T</b> <b>V</b> <b>Q</b> <b>A</b> <b>L</b> <b>A</b> <b>L</b> <b>T</b> <b>F</b> <b>C</b> <b>H</b> <b>L</b> <b>K</b> <b>Q</b> <b>F</b> <b>G</b> <b>-</b> | <b>..-M<b>G</b>K<b>Q</b>K -</b>   |                                 |
| MSH3 -Sc | <b>F</b> <b>E</b> <b>R</b> <b>I</b> <b>L</b> <b>Y</b> <b>Q</b> <b>G</b> <b>A</b> <b>S</b> <b>F</b> <b>R</b> <b>S</b> <b>L</b> <b>S</b> <b>N</b> <b>T</b> <b>E</b> <b>M</b> <b>T</b> <b>I</b> <b>S</b> <b>A</b> <b>N</b> <b>T</b> <b>L</b> <b>Q</b> <b>Q</b> <b>E</b> <b>V</b> <b>K</b> <b>N</b> <b>N</b> <b>D</b> <b>G</b> <b>S</b> <b>E</b> <b>S</b> <b>G</b> <b>S</b> <b>L</b> <b>F</b> <b>H</b> <b>N</b> <b>M</b> <b>N</b> <b>H</b> <b>T</b> <b>L</b> <b>V</b> <b>Y</b> <b>G</b> <b>S</b> <b>R</b> <b>L</b> <b>R</b> <b>H</b> <b>H</b> <b>W</b> <b>T</b> <b>H</b> <b>P</b> <b>L</b> <b>C</b> <b>D</b> <b>R</b> <b>N</b> <b>L</b> <b>I</b> <b>S</b> <b>A</b> <b>R</b> <b>L</b> <b>D</b> <b>A</b> <b>V</b> <b>S</b> <b>E</b> <b>I</b> <b>S</b> <b>A</b> <b>C</b> <b>M</b> <b>G</b> <b>S</b> <b>H</b> <b>S</b> <b>S</b> <b>-</b>                             | <b>I</b> <b>L</b> <b>S</b> <b>S</b> <b>E</b> <b>L</b> <b>V</b> <b>E</b> <b>E</b> <b>G</b> <b>S</b> <b>E</b> <b>R</b> <b>A</b> <b>I</b> <b>V</b> <b>S</b> <b>S</b> <b>P</b> <b>E</b> <b>F</b> <b>Y</b> <b>L</b> <b>V</b> <b>L</b> <b>S</b> <b>V</b> <b>L</b> <b>T</b> <b>A</b> <b>M</b> <b>S</b> <b>R</b> <b>S</b> <b>D</b> <b>I</b> <b>O</b> <b>R</b> <b>G</b> <b>I</b> <b>T</b> <b>R</b> <b>I</b> <b>F</b> <b>H</b> <b>R</b> <b>I</b> <b>A</b> <b>K</b> <b>A</b> <b>T</b> <b>E</b> <b>F</b> <b>A</b> <b>V</b> <b>M</b> <b>E</b> <b>A</b> <b>I</b> <b>L</b> <b>L</b> <b>AG</b> <b>K</b> <b>Q</b> <b>I</b> <b>Q</b> <b>R</b> <b>L</b> <b>G</b> <b>I</b> <b>K</b> <b>Q</b> <b>D</b> <b>S</b> <b>E</b> <b>M</b> <b>R</b> <b>S</b> <b>M</b> <b>Q</b> <b>S</b> <b>-</b> <b>A</b> <b>T</b> <b>V</b> <b>R</b> <b>S</b> <b>T</b> <b>L</b> <b>R</b> <b>K</b> <b>-</b>                                    | <b>..-M<b>G</b>K<b>Q</b>K -</b>   |                                 |
| MSH3 -At | <b>Q</b> <b>L</b> <b>S</b> <b>S</b> <b>E</b> <b>L</b> <b>V</b> <b>E</b> <b>E</b> <b>G</b> <b>S</b> <b>E</b> <b>R</b> <b>A</b> <b>I</b> <b>V</b> <b>S</b> <b>S</b> <b>P</b> <b>E</b> <b>F</b> <b>Y</b> <b>L</b> <b>V</b> <b>L</b> <b>S</b> <b>V</b> <b>L</b> <b>T</b> <b>A</b> <b>M</b> <b>S</b> <b>R</b> <b>S</b> <b>D</b> <b>I</b> <b>O</b> <b>R</b> <b>G</b> <b>I</b> <b>T</b> <b>R</b> <b>I</b> <b>F</b> <b>H</b> <b>R</b> <b>I</b> <b>A</b> <b>K</b> <b>A</b> <b>T</b> <b>E</b> <b>F</b> <b>A</b> <b>V</b> <b>M</b> <b>E</b> <b>A</b> <b>I</b> <b>L</b> <b>L</b> <b>AG</b> <b>K</b> <b>Q</b> <b>I</b> <b>Q</b> <b>R</b> <b>L</b> <b>G</b> <b>I</b> <b>K</b> <b>Q</b> <b>D</b> <b>S</b> <b>E</b> <b>M</b> <b>R</b> <b>S</b> <b>M</b> <b>Q</b> <b>S</b> <b>-</b> <b>A</b> <b>T</b> <b>V</b> <b>R</b> <b>S</b> <b>T</b> <b>L</b> <b>R</b> <b>K</b> <b>-</b> | <b>..-M<b>G</b>K<b>Q</b>K -</b>   |   |                                 |
| MSH3 -Sc | <b>L</b> <b>I</b> <b>S</b> <b>V</b> <b>I</b> <b>S</b> <b>S</b> <b>P</b> <b>V</b> <b>V</b> <b>D</b> <b>N</b> <b>A</b> <b>G</b> <b>K</b> <b>L</b> <b>L</b> <b>S</b> <b>A</b> <b>L</b> <b>N</b> <b>K</b> <b>E</b> <b>A</b> <b>V</b> <b>R</b> <b>G</b> <b>-</b> <b>..-D</b> <b>L</b> <b>D</b> <b>I</b> <b>L</b> <b>I</b> <b>T</b> <b>S</b> <b>-</b> <b>S</b> <b>D</b> <b>Q</b> <b>F</b> <b>P</b> <b>E</b> <b>L</b> <b>A</b> <b>E</b> <b>A</b> <b>R</b> <b>Q</b> <b>A</b> <b>V</b> <b>L</b> <b>V</b> <b>I</b> <b>R</b> <b>E</b> <b>K</b> <b>L</b> <b>S</b> <b>I</b> <b>A</b> <b>S</b> <b>F</b> <b>R</b> <b>K</b> <b>K</b> <b>L</b> <b>A</b> <b>I</b> <b>R</b> <b>N</b> <b>L</b> <b>E</b> <b>F</b> <b>L</b> <b>Q</b> <b>V</b> <b>S</b> <b>G</b> <b>I</b> <b>T</b> <b>H</b> <b>L</b> <b>I</b> <b>E</b> <b>L</b> <b>P</b> <b>-</b>                                   | <b>L</b> <b>F</b> <b>S</b> <b>E</b> <b>L</b> <b>N</b> <b>E</b> <b>L</b> <b>L</b> <b>S</b> <b>T</b> <b>T</b> <b>Q</b> <b>L</b> <b>P</b> <b>H</b> <b>E</b> <b>L</b> <b>T</b> <b>M</b> <b>I</b> <b>N</b> <b>V</b> <b>S</b> <b>A</b> <b>V</b> <b>M</b> <b>E</b> <b>K</b> <b>N</b> <b>S</b> <b>D</b> <b>K</b> <b>Q</b> <b>W</b> <b>M</b> <b>D</b> <b>F</b> <b>N</b> <b>N</b> <b>Y</b> <b>D</b> <b>C</b> <b>S</b> <b>E</b> <b>G</b> <b>I</b> <b>K</b> <b>Q</b> <b>R</b> <b>E</b> <b>S</b> <b>E</b> <b>V</b> <b>R</b> <b>S</b> <b>Q</b> <b>L</b> <b>E</b> <b>E</b> <b>L</b> <b>A</b> <b>E</b> <b>I</b> <b>R</b> <b>K</b> <b>Y</b> <b>L</b> <b>K</b> <b>R</b> <b>P</b> <b>Y</b> <b>I</b> <b>N</b> <b>R</b> <b>D</b> <b>E</b> <b>V</b> <b>D</b> <b>Y</b> <b>L</b> <b>I</b> <b>E</b> <b>V</b> <b>K</b> <b>N</b> <b>S</b>  | <b>..-M<b>G</b>K<b>Q</b>K -</b>   |                                 |

FIG. 5A

|          |                                      |
|----------|--------------------------------------|
| MSH3 -At | VDSKVPHNWKVNSTKKTIRYHPP              |
| MSH3 -Sc | QIKDLPDDWIKVNNTKMSRF                 |
| MSH3 -At | TTPRQKLTKLEYYKDLLIRESELQYKEFLNKITAEY |
| MSH3 -Sc | TELRKITLNLQYDCILS LAATSCN            |
| MSH3 -At | CEPVEINIQSGRHPVLETTI                 |
| MSH3 -Sc | QQ - AIIAKNARNPIES -                 |
| MSH3 -At | LQDNFVPPNDTILHAEGEY                  |
| MSH3 -Sc | YIROVALISIMAQWGSFVPA                 |
| MSH3 -At | FAKLHVLDGVFTRMGASDS                  |
| MSH3 -Sc | IQHGSFVPAEEIRISIFENVL                |
| MSH3 -At | TRIGAHDDING                          |
| MSH3 -Sc | RTSFLEELSEASHHTIRTCS                 |
| MSH3 -At | SSRSRSLVILDELGR                      |
| MSH3 -Sc | TSRDGVATLQHLLAECR                    |
| MSH3 -At | LVLFTVTHYPEIAETISNG                  |
| MSH3 -Sc | FPGSGVGTYHVSYLTLO                    |
| MSH3 -At | QDKDKGSY                             |
| MSH3 -Sc | PLILFTTHFPM                          |
| MSH3 -At | MLGEIKS --- PLIRNY                   |
| MSH3 -Sc | HMDYVEEQK - - TGE                    |
| MSH3 -At | DHDDDVTYKLVRGLCSRSFGFKVAQI           |
| MSH3 -Sc | IPPSCTIRRAISMAAKLEAEVR               |
| MSH3 -At | RERERNTRMGEPEGHEEPRGAEE              |
| MSH3 -Sc | ESISALGDLFADLKFA                     |
| MSH3 -At | SEEDPMK                              |
| MSH3 -Sc | EDALKI                               |
| MSH3 -At | AEFELKHAWKIAAGKIRLKPTCSF             |
| MSH3 -Sc | -----                                |
| MSH3 -At | -----                                |
| MSH3 -Sc | ITATDKLAKLLSLDIH                     |

ପ୍ରକାଶକ

AP1 AP2 IS8 S81  
S82 S83 638 2S8 AP2 AP1  
637  
S823

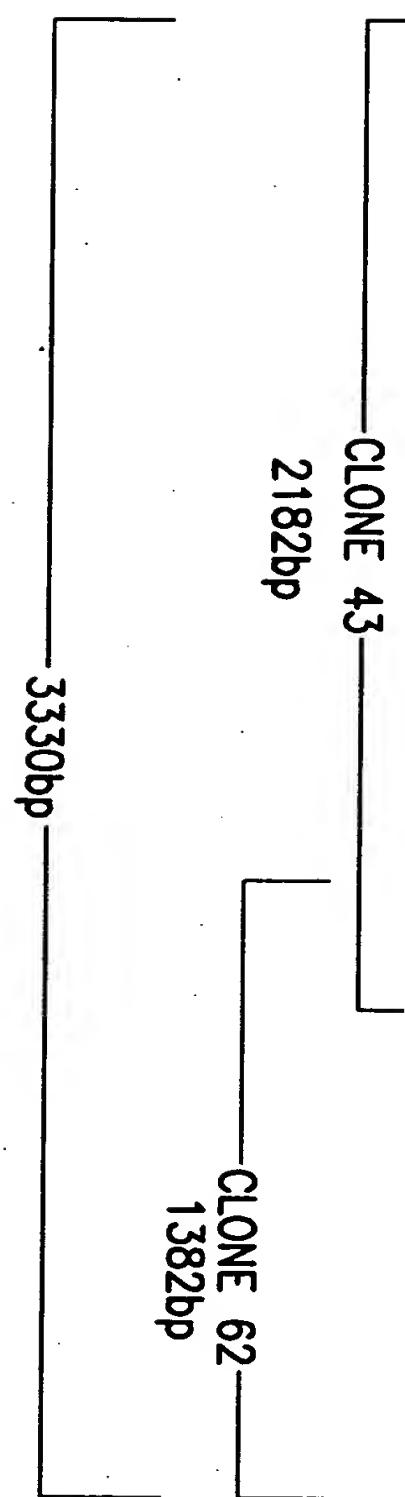
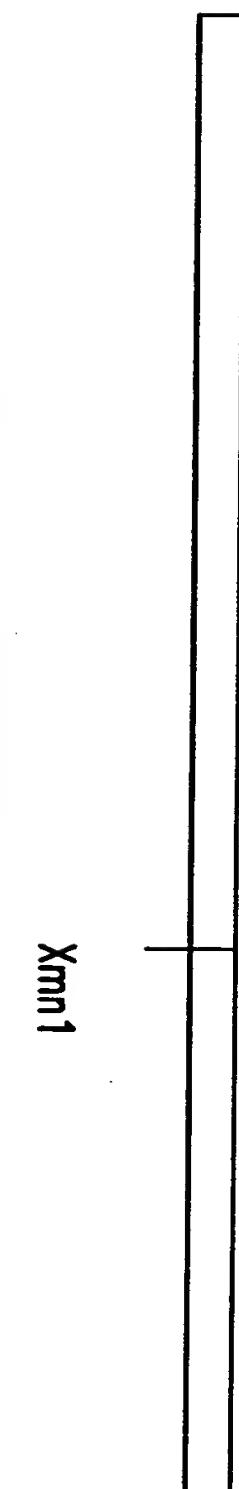
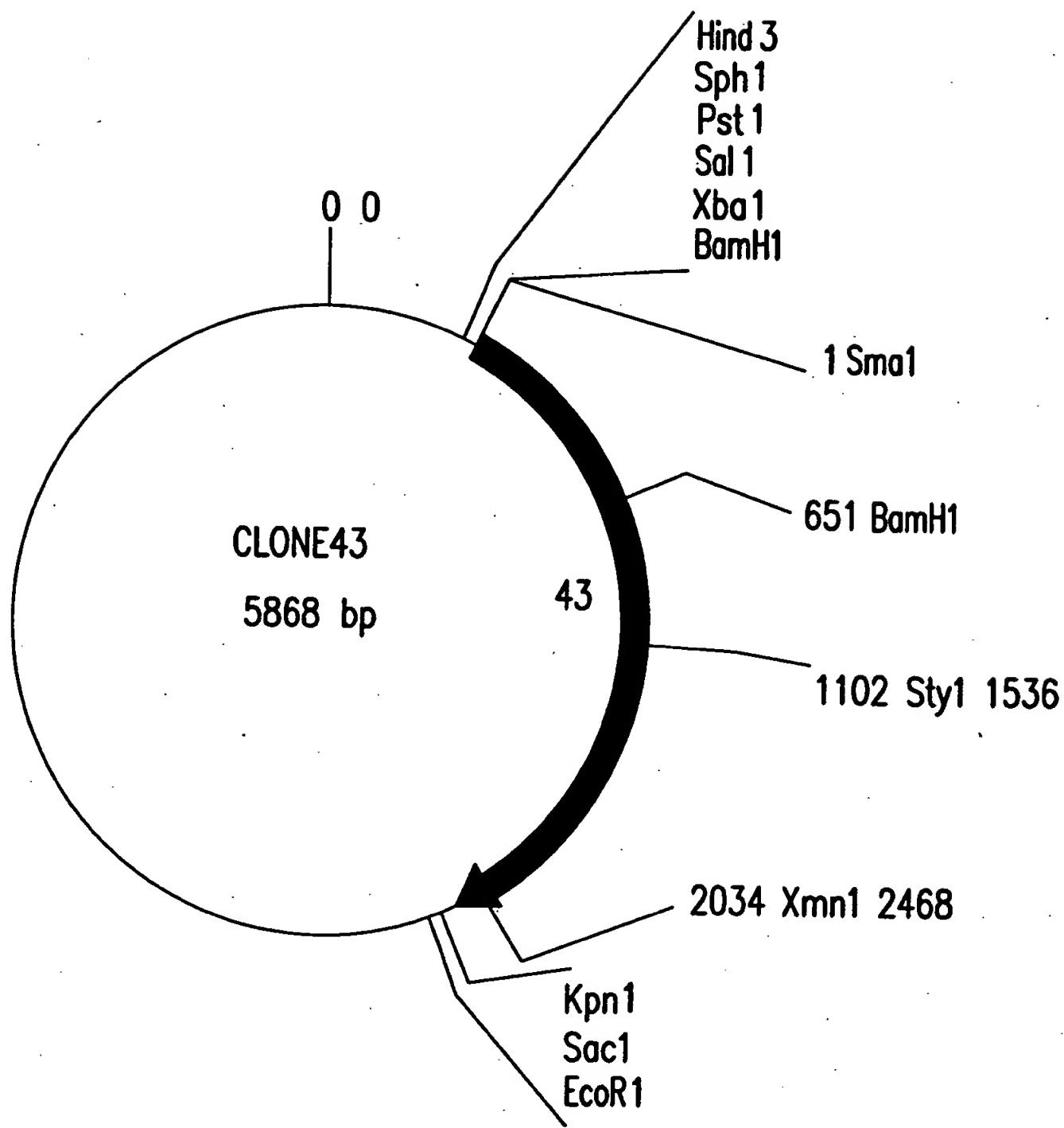
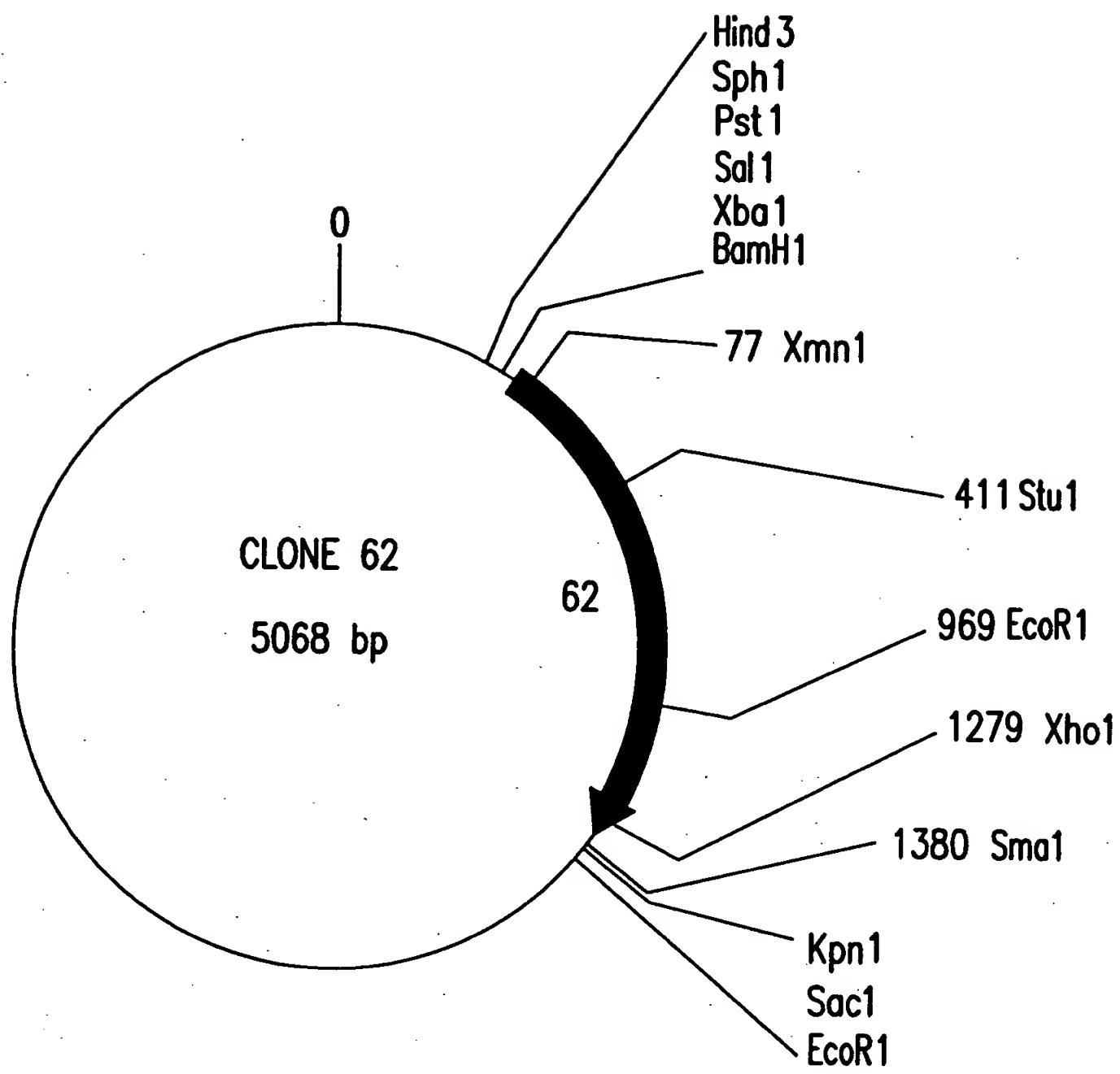


FIG. 6



COMMENTS/REFERENCES: 43=5' SIDE OF S8 (AtMSH6) 2182bp IN pUC18/Sma1

FIG. 7



COMMENTS/REFERENCES: 62=3' SIDE OF S8 (AtMSH6) 1379bp IN pUC18/Sma1

FIG.8

|     |   |     |
|-----|---|-----|
| 1   | AAAAGTTGAGCCCTGAGGGAGTACGCTCAAGGCCAAATTGGGCCAATCTTCCCCC                         | 80  |
| 81  | TTTCGAATTCTCTCAGCTCAAAACATCGTTCTCTCACTCTCTCAAA                                  | 153 |
| 1   | ATG CAG CGC CAG M Q R Q   | 4   |
| 154 | AGA TCG ATT TTG TCT TTC TTC CAA AAA CCC ACC GCG GCG ACT ACG AAG GGT TTG GTT TCC | 213 |
| 5   | R S I L S F F Q K P T A A T T K G L V S   | 24  |
| 214 | GGC GAT GCT GCT AGC GGC GGG GCC GGC AGC GGA GGA CCA CGA TTT AAT GTG AAG GAA GGG | 273 |
| 25  | G D A A S G G G G S G P R F N V R E G   | 44  |
| 274 | GAT GCT AAA GGC GAC GCT TCT GTA CGT TTT GCT GTT TCG AAA TCT GTC GAT GAG GTT AGA | 333 |
| 45  | D A K G D A S V R F A V S K S V D E V R   | 64  |
| 334 | GGA ACG GAT ACT CCA CCG GAG AAG GTT CCG CGT CGT GTC CTG CCG TCT GGA TTT AAG CCG | 393 |
| 65  | G T D T P P E K V P R R V L P S G F K P   | 84  |
| 394 | GCT GAA TCC GCC GST GAT GCT TCG TCC CTG TTC TCC AAT ATT ATG CAT AAG TTT GTA AAA | 453 |
| 85  | A E S A G D A S S L F S N I M H K F V K   | 104 |
| 454 | GTC GAT GAT CGA GAT TGT TCT GGA GAG AGG AGC CGA GAA GAT GTT GTT CCG CTG AAT GAT | 513 |
| 105 | V D R D C S G E R S R E D V P L N D   | 124 |
| 514 | TCA TCT CTA TGT ATG AAG GCT AAT GAT GTT ATT CCT CAA TTT CGT TCC AAT AAT GGT AAA | 573 |
| 125 | S S L C M K A N D V I P Q F R S N G K   | 144 |
| 574 | ACT CAA GAA AGA AAC CAT GCT TTT AGT TTC AGT GGG AGA GCT GAA CTT AGA TCA GTA GAA | 633 |
| 145 | T Q E R N H A F S G R A E L R S V E   | 164 |
| 634 | GAT ATA GGA GTA GAT GGC GAT GTT CCT GGT CCA GAA ACA CCA GGG ATG CGT CCA CGT GCT | 693 |
| 165 | D I G V D G D V P G P E T P G M R P R A   | 184 |

FIG.9A

|      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |
|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| 694  | TCT | CGC | TTG | AAG | CGA | GTT | CTG | GAG | GAT | GAA | ATG | ACT | TTT | AAG | GAG | GAT | AAG | GTT | CCT | GTA | 753  |
| 185  | S   | R   | L   | K   | R   | V   | L   | E   | D   | E   | M   | T   | F   | K   | E   | D   | K   | V   | P   | V   | 204  |
| 754  | TTG | GAC | TCT | AAC | AAA | AGG | CTG | AAA | ATG | CTC | CAG | GAT | CCG | GTT | TGT | GGA | GAG | AAG | AAA | GAA | 813  |
| 205  | L   | D   | S   | N   | K   | R   | L   | K   | M   | L   | Q   | D   | P   | V   | C   | G   | E   | K   | K   | E   | 224  |
| 814  | GTA | AAC | GAA | GGA | ACC | AAA | TTT | GAA | TGG | CTT | GAG | TCT | TCT | CGA | ATC | AGG | GAT | GCC | AAT | AGA | 873  |
| 225  | V   | N   | E   | G   | T   | K   | F   | E   | W   | L   | E   | S   | S   | R   | I   | R   | D   | A   | N   | R   | 224  |
| 874  | AGA | CGT | CCT | GAT | GAT | CCC | CTT | TAC | GAT | AGA | AAG | ACC | TTA | CAC | ATA | CCA | CCT | GAT | GTT | TTC | 933  |
| 245  | R   | R   | P   | D   | D   | P   | L   | Y   | D   | R   | K   | T   | L   | H   | I   | P   | P   | D   | V   | F   | 264  |
| 934  | AAG | AAA | ATG | TCT | GCA | TCA | CAA | AAG | TAT | TGG | AGT | GTT | AAG | AGT | GAA | TAT | ATG | GAC | ATT | 993 |      |
| 265  | K   | K   | M   | S   | A   | S   | Q   | K   | Q   | Y   | W   | S   | V   | K   | S   | E   | Y   | M   | D   | I   | 284  |
| 996  | GTG | CTT | TTC | TTT | AAA | GTG | GGG | AAA | TTT | TAT | GAG | CTG | TAT | GAG | CTA | GAT | GCG | GAA | TTA | GGT | 1053 |
| 285  | V   | L   | F   | F   | K   | V   | G   | K   | F   | Y   | E   | L   | Y   | E   | L   | D   | A   | E   | L   | G   | 304  |
| 1054 | CAC | AAG | GAG | CTT | GAC | TGG | AAG | ATG | ACC | ATG | AGT | GGT | GTG | GGA | AAA | TGC | AGA | CAG | GTT | GGT | 1113 |
| 305  | H   | K   | E   | L   | D   | W   | K   | M   | T   | N   | S   | G   | V   | G   | K   | C   | R   | Q   | V   | G   | 324  |
| 1114 | ATC | TCT | GAA | AGT | GGG | ATA | GAT | GAG | GCA | GTG | CAA | AAG | CTA | TTA | GCT | CGT | GGA | TAT | AAA | GTT | 1173 |
| 325  | I   | S   | E   | S   | G   | I   | D   | E   | A   | V   | Q   | K   | L   | L   | A   | R   | G   | Y   | K   | V   | 344  |
| 1174 | GGA | CGA | ATC | GAG | CAG | CTA | GAA | ACA | TCT | GAC | CAA | GCA | AAA | GCC | AGA | GGT | GCT | AAT | ACT | ATA | 1233 |
| 345  | G   | R   | I   | E   | Q   | L   | E   | T   | S   | D   | Q   | A   | K   | A   | R   | G   | A   | N   | T   | I   | 364  |
| 1234 | ATT | CCA | AGG | AAG | CTA | GTT | CAG | GTA | TTA | ACT | CCA | TCA | ACA | GCA | AGC | GAG | GGA | AAC | ATC | GGG | 1293 |
| 365  | I   | P   | R   | K   | L   | V   | Q   | V   | L   | T   | P   | S   | T   | A   | S   | E   | G   | N   | I   | G   | 384  |
| 1294 | CCT | GAT | GCC | GTC | CAT | CTT | CTT | GCT | ATA | AAA | GAG | ATC | AAA | ATG | GAG | CTA | CAA | AAG | TGT | TCA | 1353 |
| 385  | P   | D   | A   | V   | H   | L   | L   | A   | I   | K   | E   | I   | K   | M   | E   | L   | Q   | K   | C   | S   | 404  |

FIG. 9B

|      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |
|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|
| 1354 | ACT | GTC | TAT | GGA | TTT | GCT | TTT | GTT | GAC | TGT | GCT | GCC | TTG | AGG | TTT | TGG | GTT | GGG | TCC | ATC  | 1413 |
| 405  | T   | V   | Y   | G   | F   | A   | F   | V   | D   | C   | A   | A   | L   | R   | F   | W   | V   | G   | S   | I    | 424  |
| 1414 | AGC | GAT | GAT | GCA | TCA | TGT | GCT | CTT | GGA | GCG | TTA | TTG | ATG | CAG | GTT | TCT | CCA | AAG | GAA | 1473 |      |
| 425  | S   | D   | D   | A   | S   | C   | A   | A   | L   | G   | A   | L   | L   | M   | Q   | V   | S   | P   | K   | E    | 444  |
| 1474 | GTG | TTA | TAT | GAC | AGT | AAA | GGG | CTA | TCA | AGA | GAA | GCA | CAA | AAG | GCT | CTA | AGG | AAA | TAT | ACG  | 1533 |
| 445  | V   | L   | Y   | D   | S   | K   | G   | L   | S   | R   | E   | A   | Q   | K   | A   | L   | R   | K   | Y   | T    | 464  |
| 1534 | TTG | ACA | GGG | TCT | ACG | GCG | GTA | CAG | TTG | GCT | CCA | GTA | CCA | CAA | GTA | ATG | GGG | GAT | ACA | GAT  | 1593 |
| 465  | L   | T   | G   | S   | T   | A   | V   | Q   | L   | A   | P   | V   | P   | Q   | V   | M   | G   | D   | T   | D    | 484  |
| 1594 | GCT | GCT | GGA | GTT | AGA | AAT | ATA | ATA | GAA | TCT | AAC | GGA | TAC | TTT | AAA | GGT | TCT | TCT | GAA | TCA  | 1653 |
| 485  | A   | A   | G   | V   | R   | N   | I   | I   | E   | S   | N   | G   | Y   | F   | K   | G   | S   | S   | E   | S    | 504  |
| 1654 | TGG | AAC | TGT | GCT | GTT | GAT | GGT | CTA | AAT | GAA | TGT | GAT | GTT | GCC | CTT | AGT | GCT | CTT | GGA | GAG  | 1713 |
| 505  | W   | N   | C   | A   | V   | D   | G   | L   | N   | E   | C   | D   | V   | A   | L   | S   | A   | L   | G   | E    | 524  |
| 1714 | CTA | ATT | AAT | CAT | CTG | TCT | AGG | CTA | AAG | CTA | GAA | GAT | GTA | CTT | AAG | CAT | GGG | GAT | ATT | TTT  | 1773 |
| 525  | L   | I   | N   | H   | L   | S   | R   | L   | K   | L   | E   | D   | V   | L   | K   | H   | G   | D   | I   | F    | 544  |
| 1774 | CCA | TAC | CAA | GTT | TAC | AGG | GGT | TGT | CTC | AGA | ATT | GAT | GCC | CAG | ACG | ATG | GTA | AAT | CTT | GAG  | 1833 |
| 545  | P   | Y   | Q   | V   | Y   | R   | G   | C   | L   | R   | I   | D   | G   | Q   | T   | M   | V   | N   | L   | E    | 564  |
| 1834 | ATA | TTT | AAC | AAT | AGC | TGT | GAT | GGT | GGT | CCT | TCA | GGG | ACC | TTG | TAC | AAA | TAT | CTT | GAT | AAC  | 1893 |
| 565  | I   | F   | N   | N   | S   | C   | D   | G   | G   | P   | S   | G   | T   | L   | Y   | K   | Y   | L   | D   | N    | 584  |
| 1894 | TGT | GTT | AGT | CCA | ACT | GGT | AAG | CGA | CTC | TTA | AGG | AAT | TGG | ATC | TGC | CAT | CCA | CTC | AAA | GAT  | 1953 |
| 585  | C   | V   | S   | P   | T   | G   | K   | R   | L   | L   | R   | N   | W   | I   | C   | H   | P   | L   | K   | D    | 604  |
| 1954 | GTA | GAA | AGC | ATC | AAT | AAA | CGG | CTT | GAT | GTA | GTT | GAA | GAA | TTC | ACG | GCA | AAC | TCA | GAA | AGT  | 2013 |
| 605  | V   | E   | S   | I   | N   | K   | R   | L   | D   | V   | E   | E   | F   | T   | A   | N   | S   | E   | S   | 624  |      |

FIG.9C

|      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |
|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| 2014 | ATG | CAA | ATC | ACT | GGC | CAG | TAT | CTC | CAC | AAA | CTT | CCA | GAC | TTA | GAA | AGA | CTG | CTC | GGG | CGC | 2073 |
| 625  | M   | Q   | I   | T   | G   | Q   | Y   | L   | H   | K   | L   | P   | D   | L   | E   | R   | L   | L   | G   | R   | 644  |
| 2074 | ATC | AAG | TCT | AGC | GTT | CGA | TCA | TCA | GCC | TCT | GTG | TTG | CCT | GCT | CTT | CTG | GGG | AAA | AAA | GTG | 2133 |
| 645  | I   | K   | S   | S   | V   | R   | S   | S   | A   | S   | V   | L   | P   | A   | L   | L   | G   | K   | K   | V   | 664  |
| 2134 | CTG | AAA | CAA | CGA | GTT | AAA | GCA | TTT | GGG | CAA | ATT | GTG | AAA | GGG | TTC | AGA | AGT | GGA | ATT | GAT | 2193 |
| 665  | L   | K   | Q   | R   | V   | K   | A   | F   | G   | Q   | I   | V   | K   | G   | F   | R   | S   | G   | I   | D   | 684  |
| 2194 | CTG | TTG | TTG | GCT | CTA | CAG | AAG | GAA | TCA | AAT | ATG | ATG | AGT | TTG | CTT | TAT | AAA | CTC | TGT | AAA | 2253 |
| 685  | L   | L   | L   | A   | L   | Q   | K   | E   | S   | N   | M   | M   | S   | L   | L   | Y   | K   | L   | C   | K   | 704  |
| 2254 | CTT | CCT | ATA | TTA | GTA | GGA | AAA | AGC | GGG | CTA | GAG | TTA | TTT | CTT | TCT | CAA | TTC | GAA | GCA | GCC | 2313 |
| 705  | L   | P   | I   | L   | V   | G   | K   | S   | G   | L   | E   | L   | F   | L   | S   | Q   | F   | E   | A   | A   | 724  |
| 2314 | ATA | GAT | AGC | GAC | TTT | CCA | AAT | TAT | CAG | AAC | CAA | GAT | GTG | ACA | GAT | GAA | AAC | GCT | GAA | ACT | 2373 |
| 725  | I   | D   | S   | D   | F   | P   | N   | Y   | Q   | N   | Q   | D   | V   | T   | D   | E   | N   | A   | E   | T   | 744  |
| 2374 | CTC | ACA | ATA | CTT | ATC | GAA | CTT | TTT | ATC | GAA | AGA | GCA | ACT | CAA | TGG | TCT | GAG | GTC | ATT | CAC | 2433 |
| 745  | L   | T   | I   | L   | I   | E   | L   | F   | I   | E   | R   | A   | T   | Q   | W   | S   | E   | V   | I   | H   | 764  |
| 2434 | ACC | ATA | AGC | TGC | CTA | GAT | GTC | CTG | AGA | TCT | TTT | GCA | ATC | GCA | GCA | AGT | CTC | TCT | GCT | GGA | 2493 |
| 765  | T   | I   | S   | C   | L   | D   | V   | L   | R   | S   | F   | A   | I   | A   | A   | S   | L   | S   | A   | G   | 784  |
| 2494 | AGC | ATG | GCC | AGG | CCT | GTT | ATT | TTT | CCC | GAA | TCA | GAA | GCT | ACA | GAT | CAG | AAT | CAG | AAA | ACA | 2553 |
| 785  | S   | M   | A   | R   | P   | V   | I   | F   | P   | E   | S   | E   | A   | T   | D   | Q   | N   | Q   | K   | T   | 804  |
| 2554 | AAA | GGG | CCA | ATA | CTT | AAA | ATC | CAA | GGA | CTA | TGG | CAT | CCA | TTT | GCA | GTT | GCA | GCC | GAT | GGT | 2613 |
| 805  | K   | G   | P   | I   | L   | K   | I   | Q   | G   | L   | W   | H   | P   | F   | A   | V   | A   | A   | D   | G   | 824  |
| 2614 | CAA | TTG | CCT | GTT | CCG | AAT | GAT | ATA | CTC | CTT | GGC | GAG | GCT | AGA | AGA | AGC | AGT | GAC | AGC | ATT | 2673 |
| 825  | Q   | L   | P   | V   | P   | N   | D   | I   | L   | L   | G   | E   | A   | R   | R   | S   | S   | G   | S   | I   | 844  |

FIG.9D

|      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |
|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|
| 2674 | CAT | CCT | CGG | TCA | TTG | TTA | CTG | ACG | GGA | CCA | AAC | ATG | GGC | GGA | AAA | TCA | ACT | CTT | CTT | CGT  | 2733 |
| 845  | H   | P   | R   | S   | L   | L   | L   | T   | G   | P   | N   | M   | G   | G   | K   | S   | T   | L   | L   | R    | 864  |
| 2734 | GCA | ACA | TGT | CTG | GCC | GTT | ATC | TTT | GCC | CAA | CTT | GGC | TGC | TAC | GTG | CCG | TGT | GAG | TCT | TGC  | 2793 |
| 865  | A   | T   | C   | L   | A   | V   | I   | F   | A   | Q   | L   | G   | C   | Y   | V   | P   | C   | E   | S   | C    | 884  |
| 2794 | GAA | ATC | TCC | CTC | GTG | GAT | ACT | ATC | TTC | ACA | AGG | CTT | GGC | GCA | TCT | GAT | AGA | ATC | ATG | ACA  | 2853 |
| 885  | E   | I   | S   | L   | V   | D   | T   | I   | F   | T   | R   | L   | G   | A   | S   | D   | R   | I   | M   | T    | 904  |
| 2854 | GGA | GAG | AGT | ACC | TTT | TTG | GTA | GAA | TGC | ACT | GAG | ACA | GCG | TCA | GTT | CTT | CAG | AAT | GCA | ACT  | 2913 |
| 905  | G   | E   | S   | T   | F   | L   | V   | E   | C   | T   | E   | T   | A   | S   | V   | L   | Q   | N   | A   | T    | 924  |
| 2914 | CAG | GAT | TCA | CTA | GTA | ATC | CTT | GAC | GAA | CTG | GGC | AGA | GGA | ACT | AGT | ACT | TTC | GAT | GGA | TAC  | 2973 |
| 925  | Q   | D   | S   | L   | V   | I   | L   | D   | E   | L   | G   | R   | G   | T   | S   | T   | F   | D   | G   | Y    | 944  |
| 2974 | GCC | ATT | GCA | TAC | TCG | GTT | TTT | CGT | CAC | CTG | GTA | GAG | AAA | GTT | CAA | TGT | CGG | ATG | CTC | TTT  | 3033 |
| 945  | A   | I   | A   | Y   | S   | V   | F   | R   | H   | L   | V   | E   | K   | V   | Q   | C   | R   | M   | L   | F    | 964  |
| 3034 | GCA | ACA | CAT | TAC | CAC | CCT | CTC | ACC | AAG | GAA | TTC | GCG | TCT | CAC | CCA | CGT | GTC | ACC | TCG | AAA  | 3093 |
| 965  | A   | T   | H   | Y   | H   | P   | L   | T   | K   | E   | F   | A   | S   | H   | P   | R   | V   | T   | S   | K    | 984  |
| 3094 | CAC | ATG | GCT | TGC | GCA | TTC | AAA | TCA | AGA | TCT | GAT | TAT | CAA | CCA | CGT | GCT | TGT | GAT | CAA | GAC  | 3153 |
| 985  | H   | M   | A   | C   | A   | F   | K   | S   | R   | S   | D   | Y   | Q   | P   | R   | G   | C   | D   | Q   | D    | 1004 |
| 3154 | CTA | GTG | TTC | TTG | TAC | CGT | TTA | ACC | GAG | GGA | GCT | TGT | CCT | GAG | AGC | TAC | GGA | CTT | CAA | GTG  | 3213 |
| 1005 | L   | V   | F   | L   | Y   | R   | L   | T   | E   | G   | A   | C   | P   | E   | S   | Y   | G   | L   | Q   | V    | 1024 |
| 3214 | GCA | CTC | ATG | GCT | GGA | ATA | CCA | AAC | CAA | GTA | GTT | GAA | ACA | GCA | TCA | GGT | GCT | GCA | GCC | 3273 |      |
| 1025 | A   | L   | M   | A   | G   | I   | P   | N   | V   | V   | E   | T   | A   | S   | G   | A   | A   | Q   | A   | 1044 |      |
| 3274 | ATG | AAG | AGA | TCA | ATT | GGG | GGA | AAC | TTC | AAG | TCA | AGT | GAG | CTA | AGA | TCT | GAG | TTC | TCA | AGT  | 3333 |
| 1045 | M   | K   | R   | S   | I   | G   | E   | N   | F   | K   | S   | S   | E   | L   | R   | S   | E   | F   | S   | S    | 1064 |

FIG. 9E

|      |     |     |     |     |     |     |     |     |     |     |     |                                    |     |     |     |     |     |     |     |     |      |
|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|------|
| 3334 | CTG | CAT | GAA | GAC | TGG | CTC | AAG | TCA | TTG | GTG | GGT | ATT                                | TCT | CGA | GTC | GCC | CAC | AAC | AAT | GCC | 3393 |
| 1065 | L   | H   | E   | D   | W   | L   | K   | S   | L   | V   | G   | I                                  | S   | R   | V   | A   | H   | N   | N   | A   | 1084 |
| 3394 | CCC | ATT | GGC | GAA | GAT | GAC | TAC | GAC | ACT | TTG | TTT | TGC                                | TTA | TGG | CAT | GAG | ATC | AAA | TCC | TCT | 3453 |
| 1085 | P   | I   | G   | E   | D   | D   | Y   | D   | T   | L   | F   | C                                  | L   | W   | H   | E   | I   | K   | S   | S   | 1104 |
| 3454 | TAC | TGT | GTT | CCC | AAA | TAA | ATG | GCT | ATG | ACA | TAA | CACTATCTGAAGCTCGTTAAGTCTTTGCCTCTCT | *   | *   | *   | *   | *   | *   | *   | *   | 3521 |
| 1105 | Y   | C   | V   | P   | K   | *   | M   | A   | M   | T   | *   | 5                                  |     |     |     |     |     |     |     |     |      |
| 3522 | G   | ATG | TTT | ATT | CCT | CTT | AAA | AAA | TGC | TTA | TAT | ATC                                | AAA | AAA | TTG | TTT | CCT | CGA | TTA | AAA | 3579 |
| 1    | M   | F   | I   | P   | L   | K   | K   | C   | L   | Y   | I   | K                                  | K   | L   | F   | P   | R   | L   | K   | 19  |      |
| 3580 | AAA                                | AAA | AAA | AAA | AAA | AAA | AAA | AAA | AAA | 3606 |
| 20   | K   | K   | K   | K   | K   | K   | K   | K   | K   | K   | K   | K                                  | K   | K   | K   | K   | K   | K   | K   | 28  |      |

FIG.9F

|            |  |
|------------|--|
| AtMSH6-mi  | -----MOR-----ORSILSFF-----QKPTAATTGKGLVSGDAASGG-GCSGGPRNVREGDAKGDAASVRFAVSKSVDEVRGTD                         |
| MSH6_yeast | -----MAPATPKTSKTAHFENGSTSSQKKMKSLLSFFSKQVPSGTPSKKVKQKPTPAILENTATDKKNPQGKTKLFDVDDEDND-LTIAEETVSTVRS DIMHQS    |
| AtMSH6-mi  | PPEKVPVRVLPSGFKAESAGDASSLFSNIMHK-----FVKVDDRD-----CSGERSREDWPLN-----DSSLCKMKA&DVIQFRSNNGKTOERNHAFSFSG-RAEIRS |
| MSH6_yeast | POSDTMLNSNITEPKSTTDEDLSSSOSRRNHKRRVNYAESDDDSDDTTAKRKKGKWDSESDDEDEYLPDKNDGDEDDDIADDKEDIGELAEDSGDDDLIS         |
| AtMSH6-mi  | VEDIGVGDVPGPETPGMRRPASRLKRVLEDEMFTKEDKVPLDSNKRKLMLQDPVCGERKEVNEGTFKEMLESSRIRDANRRRPDDPLYDRKTHIPPDVFKKM       |
| MSH6_yeast | LAETTSKKFSYNTSHHSSSPFTRNISRDNKKSR PNOAPRSYNPSHSQPSATSKSKFNKNEERYQWLVD-----RDAQRPKSDPEYDPRULYIPSSAWNKF        |
| AtMSH6-mi  | SASOKOYWSVKSEYMDIVUFFKVGKFELYELDAELGHKELDWKMTMSGVGKCRQVGISSESGIDEAVQKL LARGYKVGRIEOLETSDOAKAR-GANTITPRKLVQ   |
| MSH6_yeast | TPFEKOYWEIKSKMWDCTIVFFKGKFFELYEKDALLANALFDLKIAGGRANMQLAGIPEMSFEYWAQFIQMGYKVAKVQDQRESMLAKEMREGSKGIVKREIQC     |
| AtMSH6-mi  | VLTPSIASEGNIGP-----DAVHLLAIKE-----IKMELQCS-----TVYGFCAFVDCALRFWGSISDDASCAIGALLMOVSPKEVLYDSKGLSREAQKLR        |
| MSH6_yeast | ILTSGIILTGDMLHSDLATFCLAIREEPGNFNETQDSSSTIVQKLNTKIFGAFAIDTATGELOMLEFEDDSECTKLDLMSQVRPMEVVMERNNLSTLANKIV       |
| AtMSH6-mi  | KYTLTGSTAVQLAPVQVMGDTDAAGVRNIESNGYFKGSSESNCAVDGLNEC-----DVALSALGELINHLSRLKLED-----VLIKHGDIIFPYQVYRGCLRIDGOMV |
| MSH6_yeast | FNSAPNAIFNEVKAGEEFY-----DCDKTYAEIISSEYFS TEEDMPEVLKSYYDTGKKVGFSAFGGLYYLKWLKLDKNLISMKNIKEYDFVKSQHSMWLDGIIQ    |
| AtMSH6-mi  | NLEIFNNNSCDGGPGSGTLYKYLDCNCVSPITGKRLLLRNWICHPLKDVESTINKRLDVEEFTANSESMQITGQYLHKLPLDLERLIGRIKS-----            |
| MSH6_yeast | NLEIFNSNSFDGSDKGTLFLNRAITPMGKRMWKWLHPLRNDIESRLSDVDSLQDITLREQLEITFSKLPLDLERMLARIHSRTIKVKDFEKVITAFETII         |
| AtMSH6-mi  | -----SVRSS-----ASVLPALLGKKVLKORVKAFQOIKGFRSGIDLLALQKE-----SNMMSLLYKLCKLPLILVGKSGLELFLSQFEAA                  |
| MSH6_yeast | ELQOSLKNNDLKGDVSKYISSLFPEGLVEAVKSWTNAFERQKAINENITVQORGDIEDFKSMDRIQELEDELMELMEILMTYRKQFKCSNIQYKDSCKEITYIEIPIS |
| AtMSH6-mi  | IDSDFPN-----YQNQD-----VTDENAEFTLTIELFIERATO-----WSEVIIHTSICLDVRSFAIAASLSAGSMARPVIFPESAEATDON                 |
| MSH6_yeast | ATKNVPSNWQMAANKTYKRYYSDEVRALARSMAEAEKIEHKTLEEDLKNRLCQFDAHYNTIWMPPTQIASNIDCLALAITRTSEYLGAPSCRIPTIVDEVDSTNT    |

FIG. 10A

|            |                                 |                           |                            |                            |
|------------|---------------------------------|---------------------------|----------------------------|----------------------------|
| AtMSH6-mi  | QTKGPILKIQGLWHPFA - - VAADGQLPV | PNDILLGEARRSSGSIHPRSLLTGP | NMGKSTLLRATCLAVIFAOLG      | CYWPCESEISLVDTITRLGASDRIMT |
| MSH6_yeast | QLNG - - FLKFKSLURHP            | CFNLGATTAKDFIPNDI         | ELGEQ - - - - - PR         | LGANAAAGKSTILRMACIAVIMAQ   |
| AtMSH6-mi  | GESTFLVECTETIASVLQ              | QDSLVI                    | DELGRGI                    | GCYWPCESAVLTPIDIMTRLGANDN  |
| MSH6_yeast | TKSITFV                         | LDL                       | TDGMAIA                    | QVPCES                     |
| AtMSH6-mi  | RLTEGACPESYGL                   | QWALMAG                   | YIP                        | TRSKHMACAF                 |
| MSH6_yeast | QVWETASGAAQ - - - - -           | AMKRSIGENFKSSEL           | TKEFASHPRV                 | RSYQPRGCDQDLVFLY           |
| AtMSH6-mi  | KMLEGQSEG                       | LRSEFSS                   | TSKHM                      | QSLGFATHYGT                |
| MSH6_yeast | SFGWMH                          | EDWLKSLVG                 | MACAF                      | ASSFKH                     |
| AtMSH6-mi  | WASMC                           | GISKEIIDNAQIA             | RSYQPRGCDQDLVFLY           | QVPRPLKMSILVDEAT - - - - - |
| MSH6_yeast | CGISKEIIDNAQIA                  | ADNLEHTSRLVKERD           | QSLGFATHYGT                | RNVTEFLY                   |
| AtMSH6-mi  | SSYCVPK                         | LAANNLNGEV                | ASSFKH                     |                            |
| MSH6_yeast | SIIDDLQS                        | SVPGGLQSD                 | QVPRPLKMSILVDEAT - - - - - |                            |

FIG. 10B

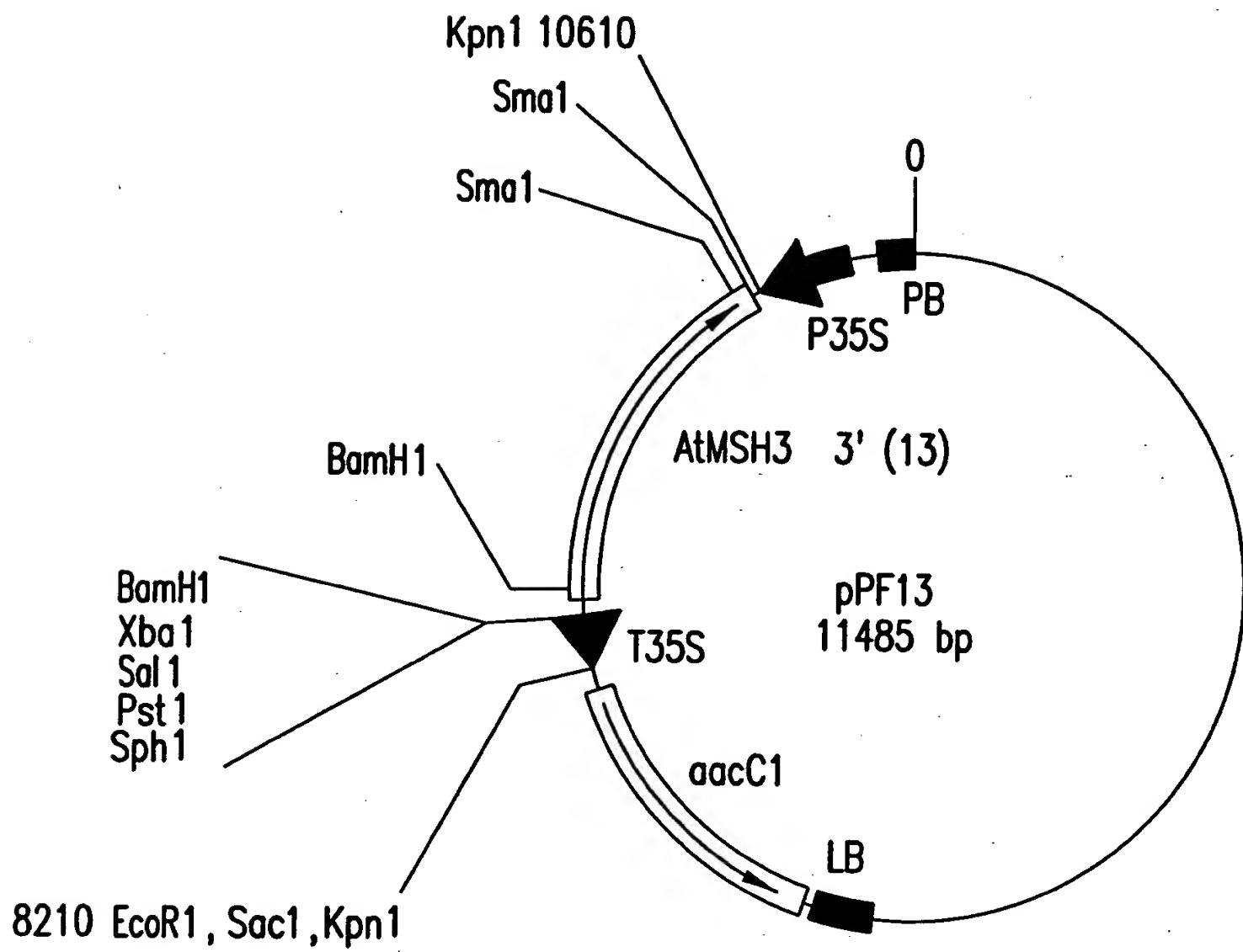
|  |      |
|--|------|
| TTTTTTGGTTGCTAACATAAAGGTATACGGTTTATGTCATCAATATAA   | 50   |
| CTATATATAAAAAGAAATGAAAGATATATATTGTTTTTCAATTATCAAAC | 100  |
| AAAACAACAAGACTTTTTTACTTTTACATTGGTCAACAAAATACAA     | 150  |
| GATAAACGACATCGTTAATCATTCCCAATTACCCCTAACGTTAACAA    | 200  |
| CCTAGAACCTCTCCATCTCGCAAGCACAGCCTGATTAGGAACAGCTT    | 250  |
| ACCATTCTCATATTCTGAACTACCTGAGTCCTCTCATTGATCTGTTCG   | 300  |
| CCAAATCCGCTTGTGACATCTCTTCCAATCTCGCTTGTATCATC       | 350  |
| AACCTCACCTCTGCTTACACGATCCATGCCGCAGGCTCTGTTCTTC     | 400  |
| TTCCAGCTTCTCGTTAACCGGAACCGCCGTAGATTCCCTTT          | 450  |
| TGTTCGAACCGGCATCGAATTCTTAACCGTTGAACCGCGACACCGTT    | 500  |
| CTCAGAGCTGCGTTAACCGCTTTCGGATCGCGTAGGTCTGGCTCTTG    | 550  |
| TTTTGATTGTGGAGAACTACTGGTCCCAGTCTGTGTTACTGCTCCTG    | 600  |
| GGTATCTGCTCGGCATCGTCGATGAATTGAGAGAAAGGAACAACCGAAA  | 650  |
| ATTTTATTAAATCTGAGTTTGAAATTGAGAAACGATGAAGATGAAGAATG | 700  |
| TTGTTGAGAGGATTGTGATATTATATACGAAGATTGGTTCTGGAGA     | 750  |
| ATTCGATCATCTTTCTCCATTTCGTCTGGAACGTTCTAGAGATG       | 800  |
| ATTGACGACGTGTCATTATCTGATTGAGTTAACCAATGCTTTGGGT     | 850  |
| TGGATTCGTGGTACACCATATTATCCGATTGGCTCAATGGTTTATATA   | 900  |
| AATTGGTTTCGGTCGGTTATGAGTTATCATTAAAATTAAGCTAACCA    | 950  |
| AAAATTTCGTAACATTTCGGTTCAATTGGATCCCTACTTCCA         | 1000 |
| GAACCGAATTATCGAAACCGGGGTAGCCGAACCGAACCGT           | 1050 |
| ATTGACTCGTGGCTAGAAAGATCCAACGGTATACAATAATAGAACATAA  | 1100 |
| ATCGGACGGTCATCAAAGCCTCAAAGAGTGAACAGTCAACAAAAAGTT   | 1150 |
| GAGCCCTGAGGAGTATCGTTCCGCCATTCTACGACGCAAGGCGAAAT    | 1200 |
| TTTTGGCGCCAATCTTCCCCCTTCGAATTCTCTCAGCTAAACATC      | 1250 |
| GTTTCTCTCACTCTCTCACAATTCAAAAAATGCAGCGCCAGAGAT      | 1300 |
| CGATTGTCTTCTTCAAAACCCACGGCGCGACTACGAAGGGTTG        | 1350 |
| GTTTCCGGCGATGCTGCTAGCGGGGGGGCGGCAGCGGAGACCACGATT   | 1400 |
| AATGTGAAGGAAGGGGATGCTAAAGGCAGCGCTTCTGTACGTTTGCTGT  | 1450 |
| TTCGAAATCTGTCGATGAGTTAGAGGAACGGACTCCACCGGAGAAGG    | 1500 |
| TTCCGCGTCGTGCTGCCGTGGATTAAAGCCGGCTGAATCCGCCGGT     | 1550 |
| GATGCTTCGTCCTGTTCTCCAATATTATGCATAAGTTGTAAAAGTCGA   | 1600 |
| TGATCGAGATTGTTCTGGAGAGAGGTAACGTTCTCGATTCTCTTAATT   | 1650 |
| TGTTATCTTAGCTGGAAGAAGAAGATTGTTGTTATTGTTGCTT        | 1700 |
| GGAGAGATTCTGATTACTGCATTGGATCGTTGTTACAAATTTCAGGAG   | 1750 |
| CCGAGAAGATGTTCCGCTGAATGATTCTCTATGTATGAAGGCTA       | 1800 |
| ATGATGTTATTCCCTCAATTGTTCCAATAATGGTAAAACCAAGAAAGA   | 1850 |
| AACCATGCTTTAGTTCAAGTGGAGAGCTGAACCTAGATCAGTAGAAGA   | 1900 |
| TATAGGAGTAGATGGCGATGTTCTGGTCCAGAAACACCAGGGATGCGTC  | 1950 |
| CACGTGCTTCGCTGAAGCGAGTTCTGGAGGATGAAATGACTTTAAG     | 2000 |
| GAGGATAAGGTTCTGTATTGGACTCTAACAAAAGGCTGAAATGCTCCA   | 2050 |

|   |      |
|---|------|
| GGATCCGGTTGTGGAGAGAAGAAGTAAACGAAGGAACCAAATTG        | 2100 |
| AATGGCTTGAGTCTCTCGAATCAGGGATGCCAATAGAAGACGTCTGAT    | 2150 |
| GATCCCCTTACGATAGAAAGACCTTACACATACCACTGATGTTTCAA     | 2200 |
| GAAAATGTCTGCATCACAAAAGCAATATTGGAGTGTAAAGAGTGAATATA  | 2250 |
| TGGACATTGTGCTTTCTTAAAGTGGTAGTAACTATTAATCTAGTGT      | 2300 |
| CAATCCATTTCCTCAATGTGATTGTTCACTTACATCTGTTACGTTATG    | 2350 |
| CTCTTCTCAGGGGAAATTATGAGCTGTATGAGCTAGATGCGGAATTAG    | 2400 |
| GTCACAAGGAGCTTACTGGAAGATGACCATGAGTGGTGTGGAAAATGC    | 2450 |
| AGACAGGTAAATTAGTTGAAACAACTGGCCTGCTGAATTATTGTGTCTA   | 2500 |
| TAAATTGACACCAACCTTGTTCAGGTTGGTATCTCTGAAAGTGGGA      | 2550 |
| TAGATGAGGCAGTGCAAAAGCTATTAGCTCGTGGTAAGGAAACCACAT    | 2600 |
| ACTTTATGGAATTCGTTACTGCTACTCGGCTAGGATTAAAGAAATGGA    | 2650 |
| AATCACTCAAGCATCATTAGTTAGGATCCTGAGAACTCAGGATGTTTC    | 2700 |
| TTATTGTTATATAATAAGTCTTTCATCAAGGAGTAACAAACAAAACCTT   | 2750 |
| GCACAATATTGTGTGCTCACTGGCAAGGCATATATACCCAGCTAACCTT   | 2800 |
| TGCTAGTTCACTGTAGTAACAGTTACGGATAATATATGTTACTGTATG    | 2850 |
| TGGTACCCCTCATTTGTCTCTCATGGAGGCTTCAAGCCTGTGTTGAAA    | 2900 |
| CTGGATAGTTACATATGCTTCCAACAGAAACTAGCATGCAGATTATG     | 2950 |
| CTTCCCTATTCTACTAATTATGTTATTGACACACTCGTTGTTCTTGAA    | 3000 |
| AGATATAAAAGTTGGACGAATCGAGCAGCTAGAAACATCTGACCAAGCAA  | 3050 |
| AGCCAGAGGTGCTAATACTGTAAGTTCTGGATAGGTCAAGGAGAGTG     | 3100 |
| TTGCAGACTGTTGATCATTTCTTCTGTACATTACTTATGCTG          | 3150 |
| TAATTAACCTAATGGCTATTCTGGTCTGATTATCAGATAATTCCAAGGAA  | 3200 |
| GCTAGTTCAGGTATTAACCTCCATCAACAGCAAGCGAGGGAAACATCGGGC | 3250 |
| CTGATGCCGTCCATCTCTTGTCTATAAAAGAGGTTGTTATTACTTATT    | 3300 |
| TATCTTATCATGTTCAAGTCATCCAAGTCCTGAAAAATTACACTCTTCTT  | 3350 |
| TACCAATCTCCATCAAGCTGTAAAGGATTGGAATTAGAAAATCATT      | 3400 |
| ATTTGATGCTTGTATTATGCAAGAGGTTCCCTGAAAAGATCTGTT       | 3450 |
| AAGATTCTTGCACTGAAAAATTCAATCTTTAAGTGAATCCCCTACT      | 3500 |
| TTCTTACAATGATCATAGTCTGCAATTGCATGTCAAGTAATATCATTCTT  | 3550 |
| TGTTACTGCATCCCCCTTTCTTAATGACCATTGTCTATGTTGTGTTG     | 3600 |
| TCTCGTGTGGAGAAAATGATAGCTGATCCAAGCTGTACATTATCATG     | 3650 |
| ATTAAGTAGCTGCTAGGAATTGCCTTGGTTACATTGCCTAATGGTTG     | 3700 |
| ATGTCAATTCTTCTGAATCTTATTAGATCAAAATGGAGCTACAA        | 3750 |
| AAGTGTCAACTGTGTATGGATTGCTTGTGACTGTGCTGCCTTGAG       | 3800 |
| GTTTGGGTTGGGTCCATCAGCGATGATGCATCATGTGCTGCTTGGAG     | 3850 |
| CGTTATTGATGCAGGTAAAGCAAGTGTATTCTGTATCTTATGTGTACCATG | 3900 |
| TGACTTCCTGTGCATATATTGGGTTGCAGGAACTAATTCTGAATCACCA   | 3950 |
| TTTGGTATGTTTCCAGGTTCTCAAAGGAAGTGTATATGACAGTA        | 4000 |
| AAGTAAACTGCTGTATGCCAGTTGTTAAACAGAATTAAAGGT          | 4050 |
| AAATGACACTGGTTAATTAAAGTGCATACATGTTGAAATATTGCAGGGC   | 4100 |

|  |      |
|--|------|
| TATCAAGAGAAGCACAAAGGCTAAGGAAATATACTGTTGACAGGTACC     | 4150 |
| ATTTCACTAGGCAAGCTAACTGACAATTAAACCGCTCACCGAATGATAGG   | 4200 |
| TCTCTTAAACATTGCTAATGTAGATGATGTTATGTTCAATCTAATAGG     | 4250 |
| GTCTACGGCGGTACAGTTGGCTCCAGTACCAAGTAATGGGGGATACAG     | 4300 |
| ATGCTGCTGGAGTTAGAAATATAATAGAATCTAACGGATACTTAAAGGT    | 4350 |
| TCTTCTGAATCATGGAACGTGCTGTTGATGGCTAAATGAATGTGATGT     | 4400 |
| TGCCCTTAGTGCTCTGGAGAGCTAATTAAATCATCTGTCTAGGCTAAAGG   | 4450 |
| TGTGTTGGCTTGTTAGTTTGTCTTACAAATTAAAGCAAAGGAACCTT      | 4500 |
| TTCATAACTTACAGTTCTATCTACTTGAGCTAGAAGATGTACTTAAGC     | 4550 |
| ATGGGGATATTTCACATACCAAGTTACAGGGTTGTCTCAGAATTGAT      | 4600 |
| GGCCAGACGATGGTAAATCTTGAGATATTAAACAATAGCTGTGATGGTGG   | 4650 |
| TCCTTCAGGCAAGTGCATATTCTTTTGTATAACTCAACTAGAGGGCA      | 4700 |
| GACATAGAAGGAAAAATTCTAATACTTCGTACGGATCTCCAGTAAGTAAT   | 4750 |
| AGCCGATTTTGTTACCTATGTAGGGACCTTGTACAAATATCTTGATAA     | 4800 |
| CTGTGTTAGTCCAACGGTAAGCGACTCTTAAGGAATTGGATCTGCCATC    | 4850 |
| CACTCAAAGATGTAGAAAGCATCAATAAACGGCTTGATGTAGTTGAAGAA   | 4900 |
| TTCACGGCAAACTCAGAAAGTATGCAAATCACTGGCCAGTATCTCCACAA   | 4950 |
| ACTTCCAGACTTAGAAAGACTGCTGGACGGCATCAAGTCTAGCGTTGAT    | 5000 |
| CATCAGCCTCTGTGTTGCCTGCTCTCTGGGGAAAAAGTGCTGAAACAA     | 5050 |
| CGAGTAAGTATCAATCACAAAGTTCTGAGTAATGCCTCCATGAGTAGT     | 5100 |
| ATAGGACTAAAACATTACGGGTCTAGCTAAAGACTGTTCTCCTTCTTG     | 5150 |
| CAATGTCTGGTTATTCAATTACATTCTCTTAACTTATTGCATTGCAAGGTT  | 5200 |
| AAAGCATTGGCAAATTGTGAAAGGGTTAGAAGTGGATTGATCTGTT       | 5250 |
| GTTGGCTCTACAGAAGGAATCAAATATGATGAGTTGCTTATAAAACTCT    | 5300 |
| GTAAACTTCCTATATTAGTAGGAAAAAGCGGGCTAGAGTTATTCTTCT     | 5350 |
| CAATTCAAGCAGCCATAGATAGCGACTTCCAAATTATCAGGTGCCAT      | 5400 |
| CTATCTTCTACTTACAACAAAATGTCTGTCACTACTCAAAGCAATGC      | 5450 |
| ATATGGCTTAGATCTCAACTCACACCCCCGAGGGATCCTAAAGGGATTTGCT | 5500 |
| TTTATTCTTAATGTTTGGATGGTTGATTATTCTAACTTGAACTT         | 5550 |
| ATTAATCTTGTACCAAGAACAGATGTGACAGATGAAAACGCTGAAACTC    | 5600 |
| TCACAATACTTACGAACCTTATCGAAAGAGCAACTCAATGGTCTGAG      | 5650 |
| GTCATTACACCATAGCTGCCTAGATGTCTGAGATCTTGTCAATCGC       | 5700 |
| AGCAAGTCTCTGCTGGAAAGCATGGCCAGGCCTGTTATTCTCCGAAT      | 5750 |
| CAGAAGCTACAGATCAGAATCAGAAAACAAAAGGGCCAATACTAAAATC    | 5800 |
| CAAGGACTATGGCATCCATTGCAGTTGCAGGCCATGGTCAATTGCCTGT    | 5850 |
| TCCGAATGATATACTCCTGGCGAGGCTAGAAGAAGCAGTGGCAGCATT     | 5900 |
| ATCCTCGGTATTGTTACTGACGGGACCAACATGGGCGGAAAATCAACT     | 5950 |
| CTTCTTGTGCAACATGTCTGGCCGTATCTTGCCCCAAGTTGTATACT      | 6000 |
| CGTTAGATAATTACTCTATTCTTGCAATCAGTTCTCAACATGAATAAT     | 6050 |
| AAATTCTGTTCTGTCTGCAGCTGGCTGCTACGTGCCGTGAGTCTT        | 6100 |
| GCGAAATCTCCCTCGTGGATACTATCTCACAGGCTGGCGATCTGAT       | 6150 |

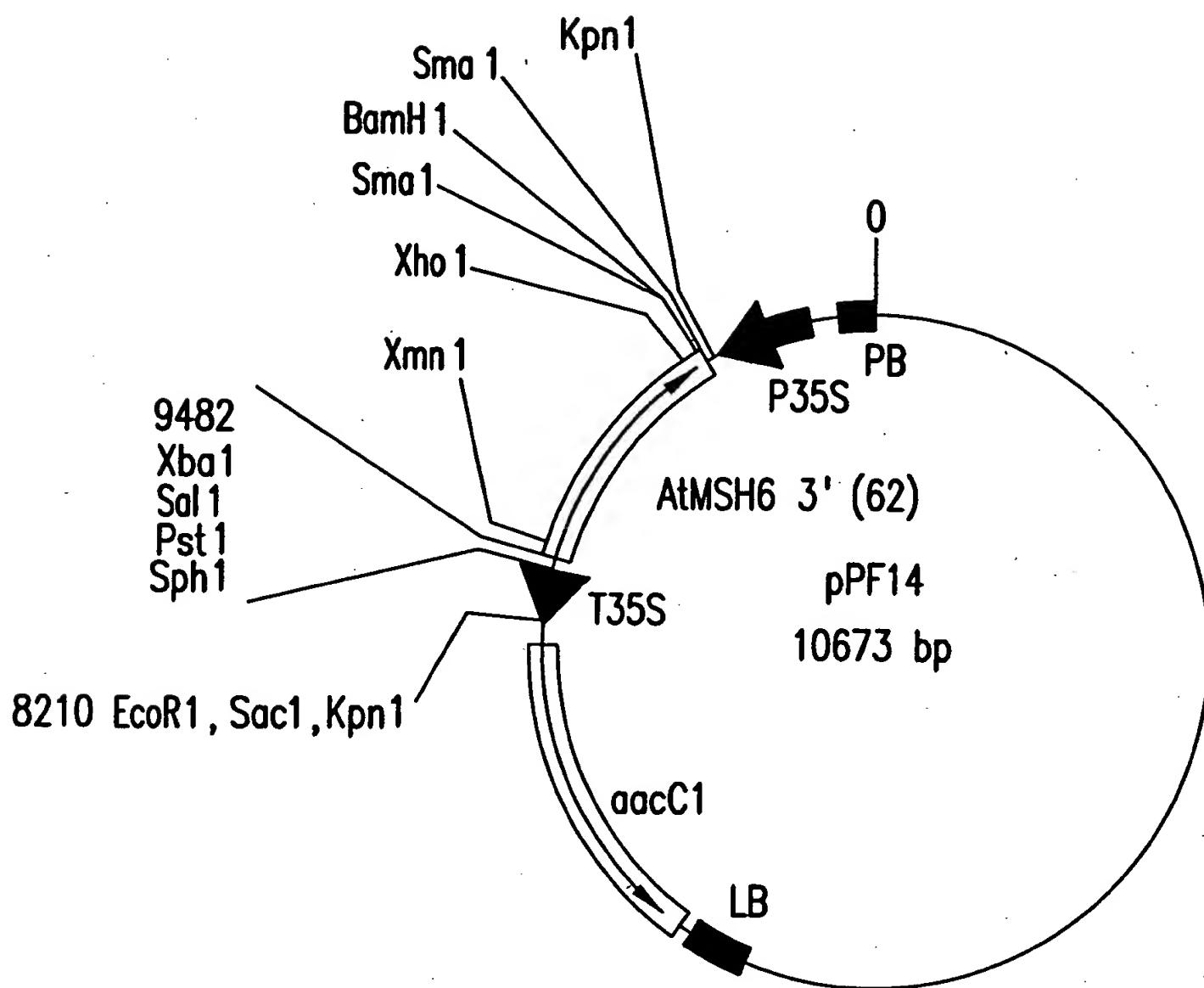
|   |      |
|---|------|
| AGAATCATGACAGGAGAGAGTAAGTTTGTCTCAAAATACCAATTCCCTC   | 6200 |
| GAACATTTACTCAGATTTGTCTGATTGGACAAGGTGGTTGCTTTT       | 6250 |
| TTTAGGTACCTTTGGTAGAATGCACTGAGACAGCGTCAGTTCTTCAGA    | 6300 |
| ATGCAACTCAGGATTCACTAGTAATCCTGACGAACCTGGCAGAGGAAC    | 6350 |
| AGTACTTCGATGGATACGCCATTGCATACTCGGTACCTGCTTCTCC      | 6400 |
| TTCAACTTATACTTGTGATCAACAAAAACATGCAATTCACTTGCTGAA    | 6450 |
| ACTTATTGATTATATCAGGTTTCGTCACCTGGTAGAGAAAGTTCAAT     | 6500 |
| GTCGGATGCTCTTGCAACACATTACCAACCTCTCACCAAGGAATTCGCG   | 6550 |
| TCTCACCCACGTGTACCTCGAAACACATGGCTTGCATTCAAATCAAG     | 6600 |
| ATCTGATTATCAACCAACGTGGTTGTGATCAAGACCTAGTGTCTTGTACC  | 6650 |
| GTTAACCGAGGGAGCTTGTCTGAGAGCTACGGACTTCAAGTGGCACTC    | 6700 |
| ATGGCTGGAATACCAAACCAAGTGGTGAAACAGCATCAGGTGCTGCTCA   | 6750 |
| AGCCATGAAGAGATCAATTGGGAAAACCAAGTCAAGTCAAGTGGCTAAGAT | 6800 |
| CTGAGTTCTCAAGTCTGCATGAAGACTGGCTCAAGTCATTGGTGGTATT   | 6850 |
| TCTCGAGTCGCCACAAACAAATGCCCTTGGCGAAGATGACTACGACAC    | 6900 |
| TTTGTGCTTGCCTATGGCATGAGATCAAATCCTCTTACTGTGTTCCCAAAT | 6950 |
| AAATGGCTATGACATAACACTATCTGAAGCTGTTAAGTCTTGTCTTCT    | 7000 |
| CTGATGTTATTCCCTCTTAAAAAAATGCTTATATATCAAAAAATTGTTCC  | 7050 |
| TCGATTATAACAAGATTATATATGTATCTGTCGGTTAGCTATGGTATAT   | 7100 |
| AATATATGTATGTTCATGAGATTGGTCAAGAGAAATACTCACAAACAGTA  | 7150 |
| TATTAAGAAGGAAATATGTTATGCATTAATTAAAGTTCAAGATAAACT    | 7200 |
| GCAAATAACCTCGACTAAAGTTGCAAAGACCAACACAAATTACAAAAC    | 7250 |
| TATAAGACTTAAGTTCTGAATTCCCTAAAACCAAAAAAAAAACAGAAC    | 7300 |
| TATTTGTTGCATCTACAAACACACAAACCTACATAGTTATAACTTAC     | 7350 |
| TCATCACTGAGATTAACATCAGAATCATTCTCCATTCTCATCTTCACT    | 7400 |
| CTCATCATCATCACCACCAACCATGATGATTCTCCTCTTCACTAC       | 7450 |
| TAGCAATCTCACTCTGAGCTCTATCAACAATCTGCTTCTGCAACTCC     | 7500 |
| AAATCTCTGAAAATCAGCTCTCATCTTCTCCAACTCCTCATTTGCTC     | 7550 |
| TTTCTTACTCTTCTCCATCTCTCATAAACCTTCCAAACCTCTCAACAG    | 7600 |
| AATCCGCCAACATCTTATACGAAGCAGCGTCATTAACCTTCTCTCTCG    | 7650 |
| TACTCAACCTCATCATCCTCATCCTCCTCTTCACTAC               | 7700 |
| ATCCATCATCTCATCAAACCCATTAGACTTATCTAAATAACCTTAGTGT   | 7750 |
| TCATAAACACAAACTCACCTGAATCAACACCACAAAGCTAAACCTAAATCC | 7800 |
| GACTGGGCGAAACACAAAGCAACATATCCAACCTATTGAAAAACGACCA   | 7850 |
| TTTACTTGAACCTAAACCTGATTCTCAACCTTAATCTTCTCTTCTAT     | 7900 |
| ACTTCCTCTTCAAGTCATCAATCATTCTCCTACATTGCGTCTCAGATTTC  | 7950 |
| TCCATCCTTAGCTCCTCACTCACTTCTCAGCTACTTCATTCCAATCCTC   | 8000 |
| GTTCCTCAAACCTCCTTACCCAATTGCAAAACCTATCTCCCCAAACTT    | 8050 |
| CAAGCAACACAA  | 8062 |

FIG. 11D



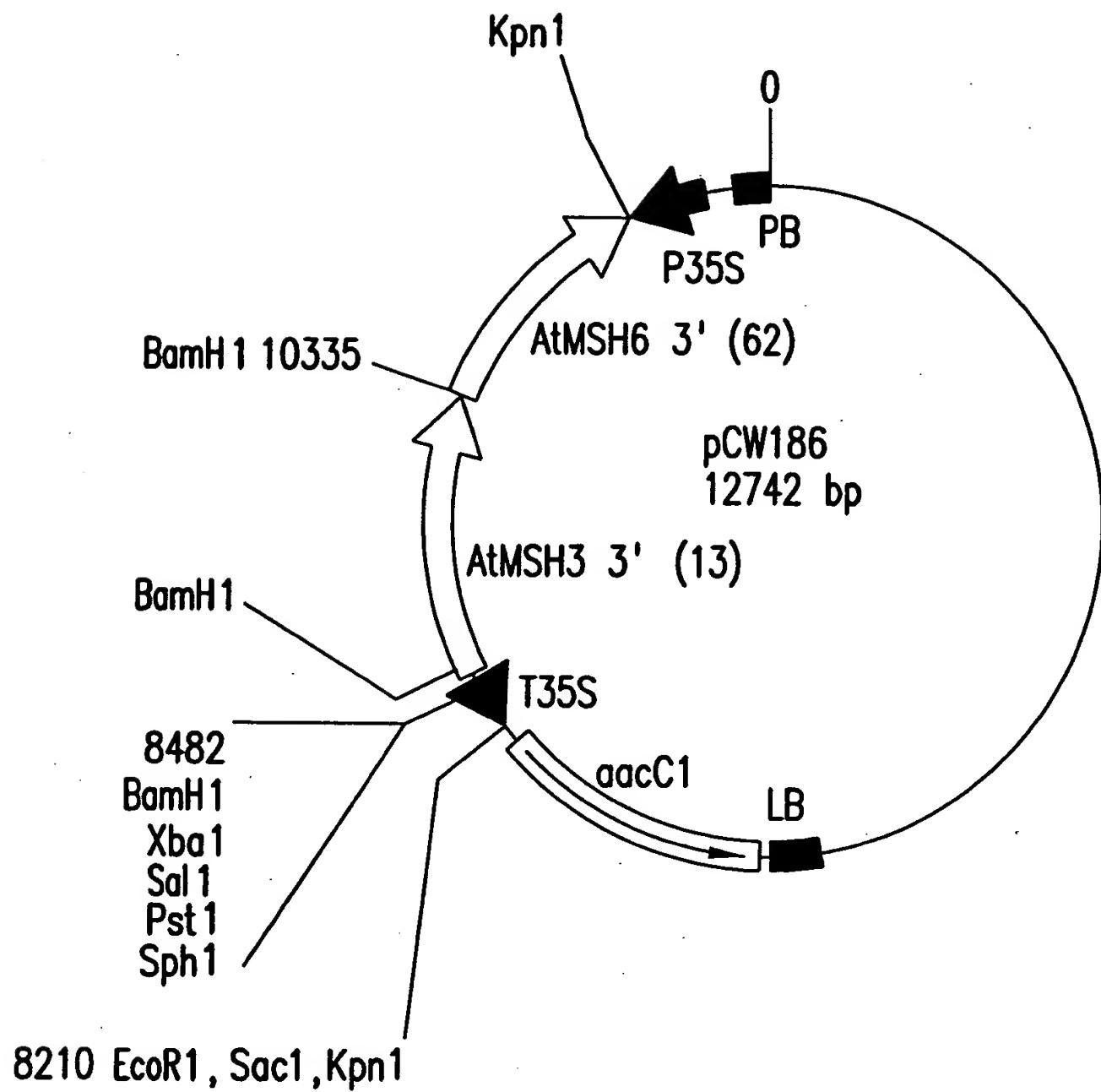
COMMENTS/REFERENCES: AtMSH3 3' SIDE ANTISENSE: AtMSH3 3' (13=2104bp) FROM pUC18/13 Sal1/Sst1/T4 INTO pCW164 BamH1/T4 IN AGROBACTERIUM LBA4404

FIG. 12



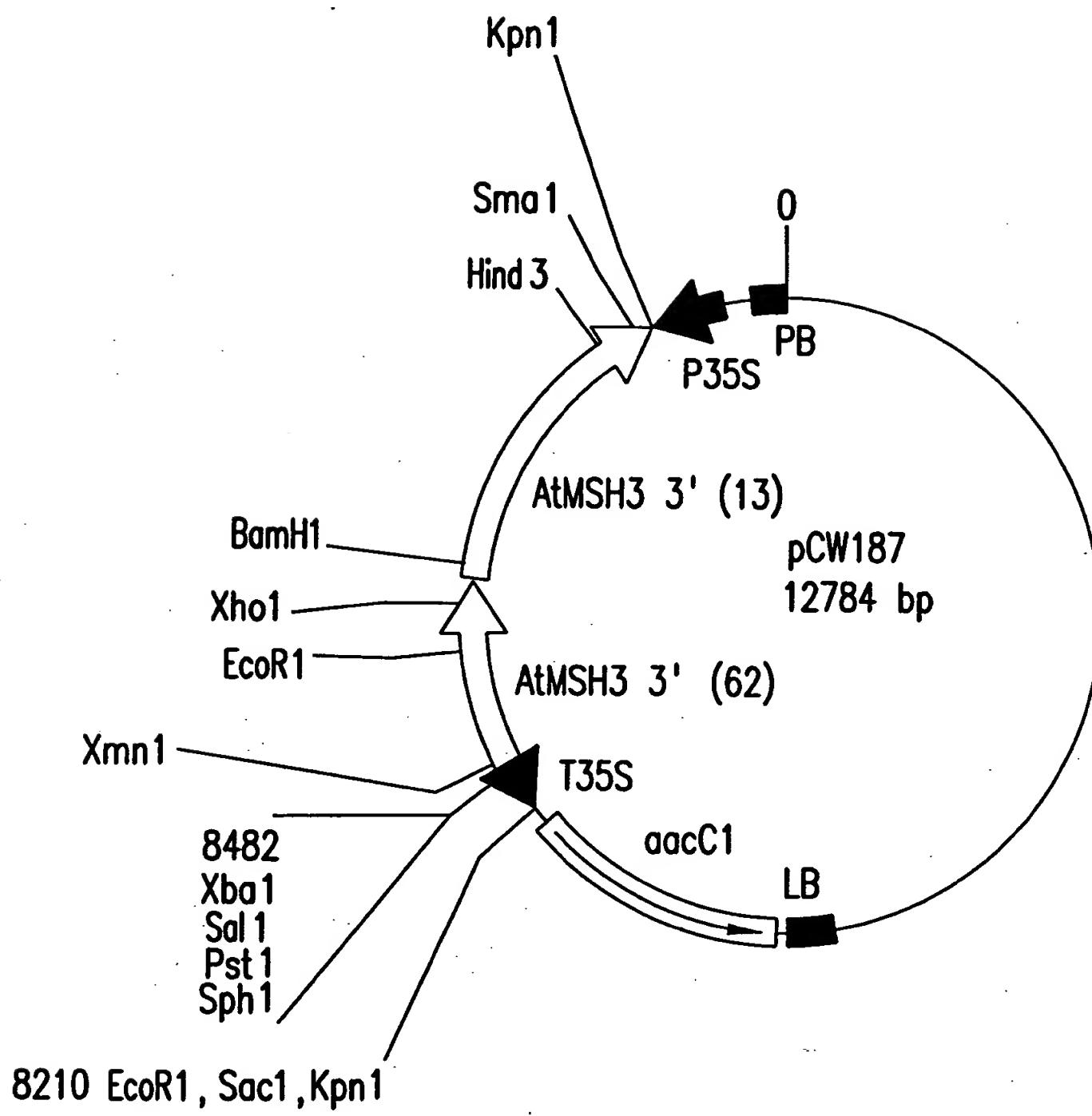
COMMENTS/REFERENCES: AtMSH6 (S8) 3' SIDE ANTISENS: 62 Sal1/Sst1/T4 (1379bp)  
INTO pcW164 BamH1/T4

FIG. 13



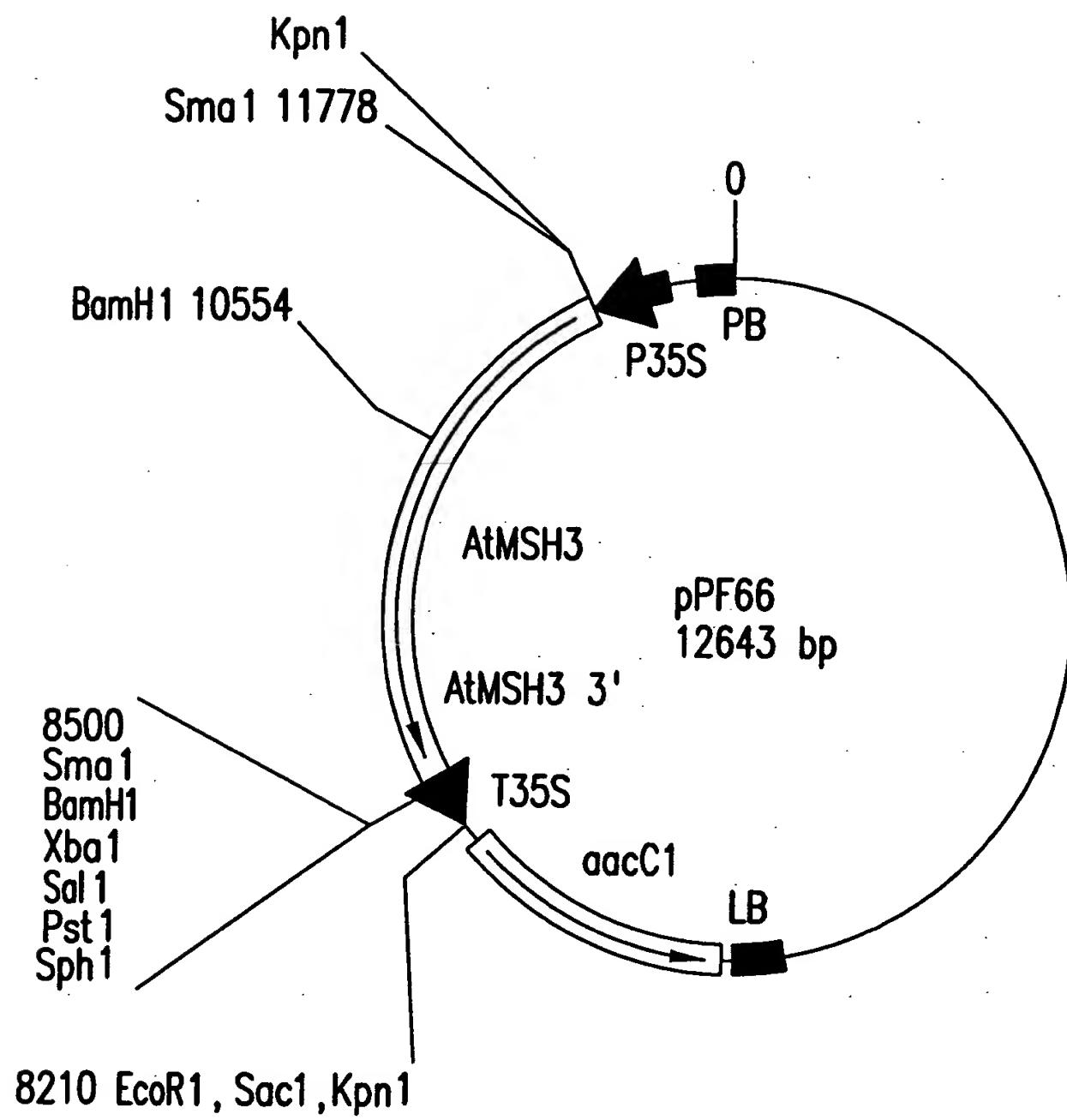
COMMENTS/REFERENCES: AtMSH6 3' /AtMSH3 3' ANTISENSE: AtMSH6 (S8) 3' SIDE (62=1379bp)  
 Sal1/Sst1/T4 INTO pPF13 (pCW164 AtMSH3 (S5) 3' SIDE (13=2104) ANTISENS)/Sma1.  
 IN LB4404

FIG. 14



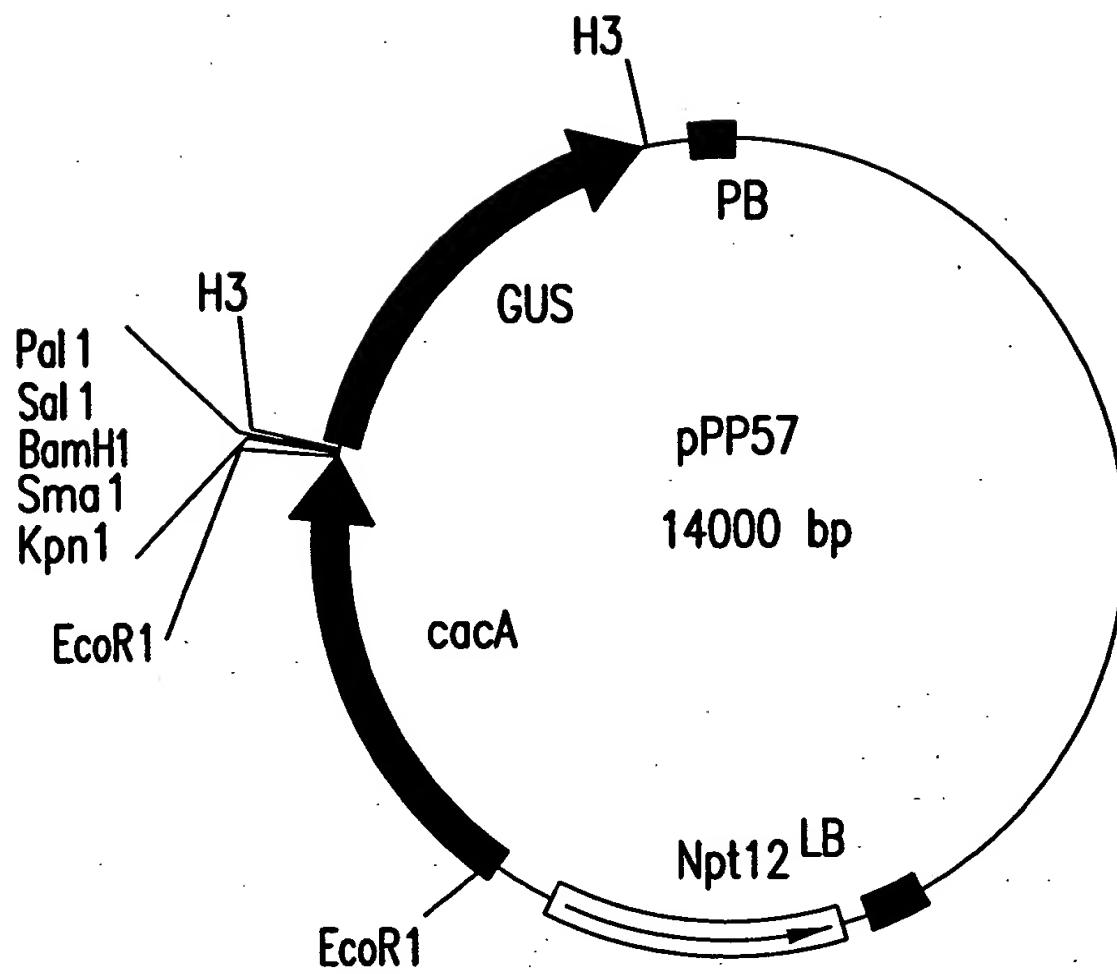
COMMENTS/REFERENCES: AtMSH3 3'/AtMSH6 3' ANTISENS (D): AtMSH3 (S5) 3' SIDE  
 (13=2104bp) Sal1/Sst1/T4 INTO pPF14 (AtMSH6 (S8) 3' SIDE (62=1379bp)  
 ANTISENSE INTO pCW164)/Sma1. IN LBA4404

FIG. 15



COMMENTS/REFERENCES: AtMSH3 (S8) COMPLETE, SENSE ORIENTATION: pPF26 (3342bp)  
 Sma1 INTO pCW164 Sma1

FIG. 16



COMMENTS/REFERENCES: pP2P111 WITH codA EcoR1 CASSETTE IN EcoR1 SITE AND Hind3  
 GUS CASSETTE IN Hind3 SITE KanR. ALL GENES UNDER PROMOTER/TERMINATOR 35S

FIG. 17

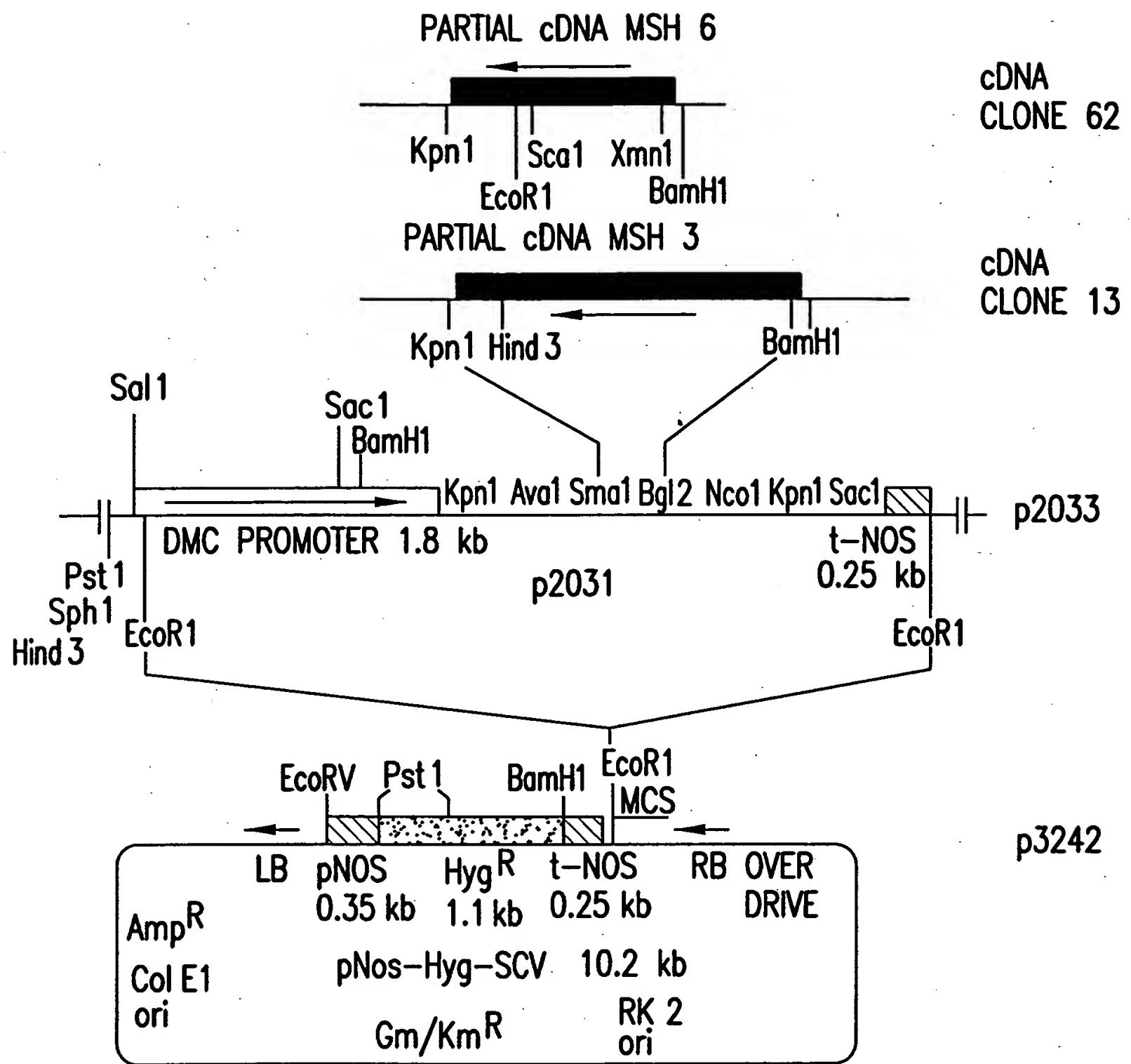


FIG. 18

p3243

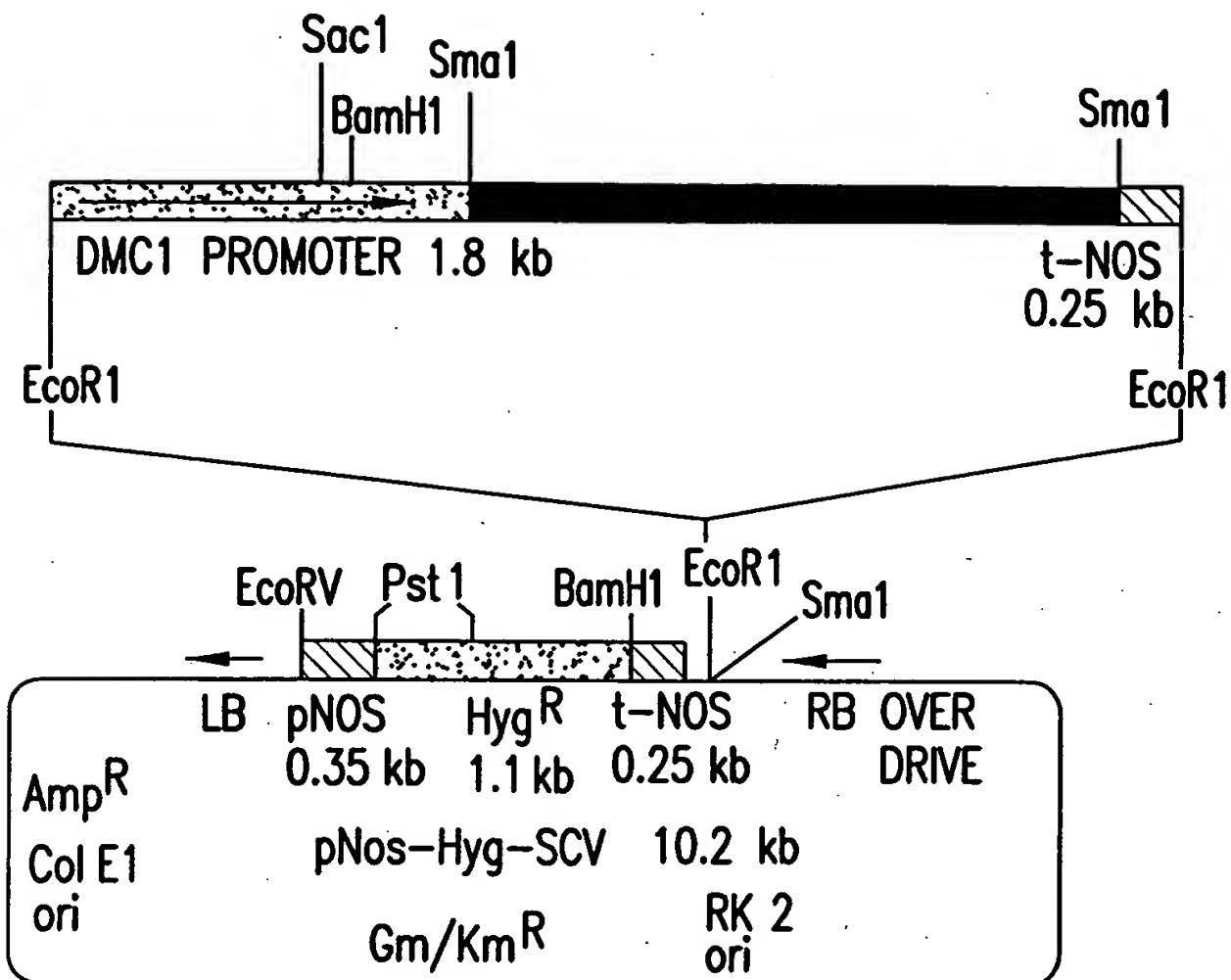


FIG. 19